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Practical Bee Culture.

HOW CAN WE SECURE THE LARGEST YIELD OF HONEY?

This is unquestionably one of the chief problems in bee-culture, well deserving to be frequently considered and thoroughly investigated. I do not, however, propose to discuss it here in its fullest scope, but only so far as a special case is involved; and would therefore limit the question more definitely by putting it in this form—"How can we secure the largest yield of honey from a colony *prepared and inclined to swarm*, when in a movable comb hive, and with a prospect of plentiful pasturage?" The range of inquiry becomes thus very considerably restricted; yet, properly viewed, it retains sufficient importance to challenge thorough discussion, and interest enough to engage attention and invite reflection. To a knowledge of the facts and principles which I shall adduce in illustration of this topic, I have attained only very gradually, as the result of numerous experiments; and I communicate them now, as acquired from actual practice in the apiary. As I do not belong to that narrow-minded class of bee-keepers who confine to their own breasts whatever observations and discoveries of general importance and value they chance to make in the course of their experience, using them only for their own exclusive benefit, it affords me gratification to communicate unreservedly my views in elucidation of the question before us.

To enable a colony generally, or when an abundance of forage is suddenly presented, to store up a large quantity of honey, two prerequisites are indispensable. In the first place, the colony must be populous; and, secondly, it must be in a condition to husband its gatherings.

I regard a colony as populous when it can properly cover ten or twelve full-built frames in a movable comb-hive; and such a colony is in a condition to lay up stores, first, if it has no occasion to build combs, and, secondly, if at the time when pasturage is most plentiful, it has not an excessive amount of brood to nurse. Comb-building makes larger demands for material—honey, and likewise exacts much time and labor. We frequently hear bee-keepers say, on such occasions—"Oh, the bees will build just as rapidly as they can gather honey." This is equivalent to saying—"when flowers yield honey, the bees instinctively know that vessels must be provided to contain it!" This, however, is an entirely erroneous view of the matter; and experience last summer clearly demonstrated it to be such. When a colony has no occasion to build combs, it expends no honey for such purpose; and that which, in other conditions, would be so used may be stored up; and the time thus saved by the busy bee, may be devoted to more profitable labor. The proof of this position is annually furnished by those colonies from which a swarm has issued, for these notoriously become the best honey stocks, in seasons ordinarily propitious.

Again, if a colony has too much brood to nurse, while forage abounds, we commonly hear it said—"Precisely when pasturage is plentiful, (at about the time of the linden blossoms) my bees clustered densely on the brood combs, and hence did not store up as much honey as we thought we had reason to expect." Very true; for under such circumstances not only will many workers be constrained to remain at home, in order to keep up the requisite brooding temperature in the hive, prepare food for the larvæ, and discharge household duties in general; but the masses of brood requiring to be nursed, consume a very large proportion of the honey daily brought in. Hence, an accumulation of stores, in such contingencies, is wholly out of the question, unless forage be uncommonly abundant and the weather peculiarly favorable for out-door labor. It is thus manifest, that if a colony is to produce the utmost possible yield, the bee-keeper must strive not only to have it populous at the opening of the season, but that it shall likewise be in the best possible condition for gathering and storing honey.

The question now recurs, what must we do in order to be certain of having right populous stocks, in the most favorable condition, at the opening of the honey season?

If a colony has been properly wintered and no special mishap occurs to check or prevent due development in the spring, it will hardly fail to become populous seasonably, without foreign aid or stimulative feeding. We have, therefore, only to consider how we may properly and seasonably strengthen *weak* colonies. There

are two modes of effecting this. A weak colony may be built up by means of its own internal resources, or by foreign aid, that is, by brood taken from strong colonies. To build up a colony in the former manner, I usually proceed thus: I endeavor first to raise the temperature of the brooding apartment of the hive, by removing all supernumerary combs and reducing the space by inserting a division board, carefully closing all slits, cracks, or crevices through which heat might escape from the brooding apartment. Then I insert between two of the brood combs in the middle of this apartment a frame of empty worker comb, selecting such, if practicable, as still contains a pound or two of sealed honey in its upper part. It will of course be understood that I had this in view already when I inserted the division board, by so placing it that the frame of empty comb might be put in its proper place. On the ensuing evening I feed the bees from below with diluted honey or sugar syrup, in a shallow dish. If a suitable supply of sealed honey in the comb has been previously introduced, a second or subsequent feeding will not be necessary. As bees instinctively desire to have their brood in adjoining ranges of comb, not suffering any vacant space to exist long in the brood-nest, the queen will promptly supply the cells of the inserted comb with eggs. As soon as these are hatched and the larvæ sealed over, an additional empty worker comb may be, in like manner, inserted in the brood-nest; and this process is to be repeated from time to time, as the increase of numbers from maturing young will permit. By keeping the brooding apartment within proper limits the while, and duly enclosed to prevent the escape of heat—especially at night, the hatching of eggs and maturing of the young will proceed without interruption. If the requisite care and circumspection be used in thus strengthening and building up a weak colony, so as never to proceed with improper haste, the object of securing a populous colony seasonably may certainly be attained. But this method is, nevertheless, not adapted to the building up of absolute *weaklings*, and will almost certainly fail if resorted to for such purpose. For such weaklings we must avail ourselves of the second method, strengthening them by the insertion of maturing brood taken from strong colonies; and they can thus speedily be converted into strong stocks—taking care to introduce combs containing worker brood ready to emerge, and not in greater number, at once, than the bees can properly cover and keep warm.

But whence are we to procure the combs of brood required for strengthening weak colonies? He who does not use unsuitable and unserviceable hives, and whose bees have been wintered properly, will generally have some populous and strong colonies in his apiary, even though he has to lend a helping hand by supplying them with a little stimulative food early in the spring, to bring them seasonably forward. From such populous stocks may safely be taken from time to time, as needed, one or more combs of maturing worker brood, immediately inserting in their stead, however, an equal number of full-built frames of empty worker comb. If there be no deficiency of forage, or the colony be adequately fed, the queen will at once proceed to supply the substituted combs with eggs; and in from nine to fourteen days the cells will be again replenished with sealed brood, and the colony will scarcely be conscious that several thousand bees have thus been abstracted from it by brood-tapping. Herein consists the wonderful power of multiplication possessed by the movable comb hives.

Having thus, without great labor, but with the exercise of sound judgment and intelligent interference, made your weak colony populous, the next effort must be to maintain it in full strength. This is another chief problem that presents itself for solution. We here encounter the natural swarming impulse of the bees. No sooner does a populous colony become conscious of its strength, and find abundant forage at command than drones are bred, queen cells started, and preparations made for the emigration of a swarm; and if the case be not taken in hand seasonably and treated judiciously, a swarm will issue, despite of our efforts to prevent it. When a colony is approaching this condition, and an immediate and continued full flow of honey may be looked for, I take prompt measures to cure it of the disposition to divide. But if forage so plentiful is not to be expected for several weeks yet, I pursue a different and milder course to prevent swarming. I effect this temporarily by enlarging the brooding space, and reducing its temperature by ventilation, also removing all drone combs and destroying the drone brood, if any is found. This latter is an essential item, requiring attention. But above all, I keep a watchful eye on the colony, acquainting myself intimately with its condition; for if we fail to act at the proper moment, and the bees once resolve to swarm, nothing short of the most radical interference can prevent them from doing so. Observing the first indications of their intention—diminished activity in flight; the non-occupying of empty combs inserted at the sides of the hive, though the population seems excessively crowded; seeing also that the combs are filled with sealed brood down to their lowermost edges; and finally noticing that drone brood is being reared in worker or transition cells, and the rudimentary queen cells are beginning to make their appearance, &c., I know that it is high time to act. I remove two or three brood-combs from the brood-nest, substituting empty worker combs for them; which is sure to be effectual for my temporary purpose. Having thus, for a protracted period, maintained the colony in full vigor, till the full flowing honey season is approaching, when honey may be rapidly stored, I proceed to apply the radical remedy, by which swarming is infallibly prevented. I provide *another* hive suitable for the size of the colony, furnished with frames filled with empty combs. Into this prepared hive, I shake off all the bees and place it on their accustomed stand. The shaking off, the transfer to a hive so strangely furnished, the entire absence of brood and stores, at once cure the bees thoroughly of their swarming propensity. But being populous, and having a full supply of combs, and thus exempted

from the necessity of building any, and having, moreover, no brood to nurse, the colony can devote all its energies to honey gathering; and it is really marvellous to see what bees in such a condition can accomplish.

If it be desired to give the colony a young fertile queen, it can easily be done at the time of transfer from their old hive. Catch and remove the old queen, cage the young one, and liberate her on the evening of the third day. Though the queen, whether an old or a young one, will, under these circumstances, lay eggs rapidly and on an extensive sale, a considerable time must nevertheless elapse before the colony can receive an accession of strength from this source; and the daily diminution of numbers is great while pasturage is plentiful. To repair these losses and maintain the colony in full vigor, nay, to make it even more populous than it was before, I take combs of maturing brood from other strong stocks, about a week after the operation, and insert them, if practicable, in the *honey apartment*, between which and the brooding apartment communication has now been opened; or if I judge the colony not to be populous enough to cover the brood combs when placed in the honey chamber (regard being had to the temperature of the weather; for if that be high, sealed brood will mature and emerge in the ordinary heat of the hive,) I place the brood comb in the brooding chamber at the side of the division board, and transfer to the honey chamber the comb removed to make room for it. I moreover now fill out the honey chamber with any good clean drone combs in my possession. Indeed, there is in general, no better means of inducing bees to work in the brood chamber than to insert therein a comb containing worker brood nearly ready to leave the cells. If, as I prefer doing, I have given the colony a young fertile queen when the bees were shaken off and transferred, I need subsequently feel less apprehensive that a swarm will issue, even if it becomes excessively populous. Nevertheless, should I suspect that one might leave, I reduce the brooding space, taking care that in doing so I do not shut up the queen in the honey chamber; or I remove some of the brood combs, and substitute for them empty worker combs.

Of course the combs from which the bees were shaken off at the time of the transfer, are used to strengthen any weak stocks I may have, or to equalize colonies in my apiary.

But, I hear some one ask, "if all these things do not proceed so smoothly as you state—if, instead of good pasturage, bad weather should intervene and cut off supplies, how then?" Why, then, indeed, you must be governed by circumstances and act accordingly. You must not permit the shaken off and transferred colony, deprived of its stores, to suffer want. It must be fed, and this is best done by inserting honey in the comb. But dread of possible mishaps should deter no one from making preparations for action. It is well enough for the bee-keeper never to be over-sanguine in his expectations, or always to look at the future in the most roseate light. Yet this must not prevent him from doing his duty, or what seems at the time to be his duty. Let him trust the event to heaven and his own good luck, without perpetually forecasting the fashion of uncertain evils.

On the whole, my respected reader will doubtless have perceived that the *gist* of the matter here is, to *know at all times the condition of his colonies*, and to have at hand constantly *an ample supply of empty worker comb*. If he have only a few good stocks and a sufficiency of such combs, the building up of colonies and the multiplying of stock may proceed as it were by steam; and a good yield of honey may be secured even in such years as are called failures by common bee-keepers, at least in such localities as mine. With a good supply of empty combs, and a knowledge of the proper mode of using them in bee-culture with movable comb hives, results almost incredible may be achieved.

C. J. H. GRAVENHORST.

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How may the largest yield of honey be secured from an apiary.

The Baron of Ehrenfels, so celebrated in his day as a successful apiarian, called bee-culture the poetry of rural economy. Undoubtedly a large majority of my readers will cordially respond to this sentiment, for I think I may safely assert that whoever once partakes of the innocent enjoyments flowing from this noble pursuit, will never again forego them, if circumstances permit him to indulge his predilections and gratify his taste. The wonderful household domiciliated in the hive presents us with so much that is interesting and instructive that scarcely any other hobby could be exchanged for it with satisfaction or advantage. No doubt all of us concede the poetry, but how comes it that so many assert that this poetry yields no profit—that, with all its delightful gratifications, it has its attendant drawbacks, and, worst of all in the eyes of matter-of-fact men, it does not *pay?* Is this so? Is it indeed true, as the proverb avers, that

> "He who would see his wealth take wing,
> Needs but invest it in pigeons and bees."

I trow not. On the contrary, I maintain that bee-culture is a remunerative occupation, yielding fifty, sixty, aye, one hundred per cent. profit annually.

But certain prerequisites on the part of the apiarian are absolutely indispensable in order to secure compensating returns.

1. He must be thoroughly conversant with the Dzierzon theory, and possess calmness, coolness, and skill in the handling of bees. In short he must show himself a master both in theory and practice. If not, he will not be much profited by this pursuit, unless kind Providence has so favored him as to cast his lot in a country, in which, as the Baron of Berlepsch quaintly expresses it, he need only open his mouth to have ample, well filled honey combs fly down his throat.

2. He must provide himself with cheap, light, and convenient hives. I can confidentially recommend the Dzierzon twin hive as such,

though it has been found fault with by some, as permitting irregular comb building in its top. The fact is so, but is by no means as disadvantageous as it has been decried to be. In poor honey districts successful wintering is very materially assured by that arrangement.

3. He must multiply stock, whether by natural or artificial swarming, only till he has obtained the normal number of colonies, of which he proposes his apiary shall consist. It is only when he has reached that point that he may begin to turn his attention to the ingathering of full crops of honey. I prefer artificial multiplication, because it furnishes me at the same time with opportunities for improving the breed of bees.

4. He must regard the honey-emptying machine as indispensable in an apiary. It is the crowning gem of the movable comb system, entitling its inventor, Major Von Hruschka, to the gratitude of every bee-keeper.

5. He must melt up no combs or pieces of comb, except such as have grown black in the service, or are rendered useless by mould, or contain an accumulation of hardened pollen. All other combs must be carefully preserved and used in his practice.

6. The apiarian needs only few implements besides, in the prosecution of his work, whether he uses bars or frames in his hives. I prefer the latter, having long since adopted them in their simple form. I never could perceive any of the alleged disadvantages attending the use of them. Of comb drawers, comb jacks, knives, fumigators, feather brushes, queen cages, feeders, gloves, and bee caps, I make no use, and will forfeit twenty-five dollars to any one who catches me using anything for protection. A tight closet for the preservation of empty combs, is much to be commended.

Follow me now in spirit to my apiary, which at present contains sixty-two colonies. There were thirty-five in the spring. You see from this that I have not quite doubled my stock. I have prevented natural swarming as much I could, and shall reduce these sixty-two colonies to thirty-four, in the fall. To those colonies which have shown themselves to be industrious and of good temperament, which are now populous, and have given prolific queens, I shall give combs containing worker cells only, if they have not already such exclusively; always selecting combs at least half full of sealed honey, if such are to be had. If there are any drone cells, I cut them out and insert comb with worker cells in their place. I move the division board close up to the last comb in the brood apartment; and in the honey apartment I insert combs and bees of any colony I intend to unite with it, having previously removed the queens and sprinkled the bees with scented sugar water. The honey has already been, for the most part, removed by the melextractor. Then, by blowing tobacco smoke into the main hive, I alarm and dispirit the bees of the colony on which I am operating, and open the communication between the two apartments. The bees of the main hive, attracted by the odor of honey, speedily enter the honey chamber, kindly unite with the besprinkled strangers, and the joint body will co-operate in carrying over into the main hive or brooding apartment the honey not yet appropriated. If thereupon I consider the colony still not sufficiently populous, and I have yet other bees to dispose of, I repeat the process. All the bees thus added, unite peaceably with the old stock. That the union can be effected more conveniently where the twin hive is used, is very well known.

I winter only such colonies as I can by this process make as strong and populous as each should be in the spring, at swarming time. In doing so some bees will doubtless be lost or killed, but that is nothing in comparison with the wholesale slaughter incident to the brimstoning system. When uniting stocks the apiarian must provide himself with as many combs filled with sealed honey as will enable him to keep his bees well supplied till the ensuing spring, without recourse to feeding as the spring approaches, or better still, he should endeavor to have his colonies in such condition in the fall, that they shall be able to spare several filled combs when the spring has fairly opened. Such strong and well provided colonies can safely endure the ordinary rigors of winter and need no special protection.

Now assume that in the spring all those thirty-four colonies are alive and vigorous, as they may fairly be expected to be. On some mild day at the close of March or the beginning of April, the customary revision and hive cleansing should be performed, and while doing so I am careful to select about one-half of the whole number of stocks to be used specially as honey gatherers and storers. To these I transfer from the remainder all such combs as contain brood nearly mature, supplying their place from my stores of reserved combs containing sealed honey in the upper portion. Such combs I am careful to supply myself with in the fall, when using the melextractor, uncapping and removing the honey from the lower ranges of cells. These colonies receive in this manner additional provision in the best and most acceptable condition for use, and are at the same time, supplied with empty worker cells for the accommodation of the queen. Eight days subsequently I repeat the operation removing brooding combs again from the brooding stocks, to the intended honey stocks; thus building up the latter with ample reinforcements of population, so that by the end of May or the beginning of June, when spring pasturage —which is our sole dependence in this locality— is in full bloom, the hives of my honey stocks are literally overcrowded with bees, as laborers ready for the harvest. The brood thus introduced having meantime hatched and obtained the age fitting them for out-door work, the colonies, rejoicing in their vigor, are prone to make arrangements for swarming—to counteract which measures must be taken early. With this view, I provide as many hives as I have honey stocks on hand, and furnish them with a full outfit of empty worker combs. In each of them I insert a piece of worker comb containing eggs and unsealed larvæ, placing it well forward, near the entrance of the hive, because I design that the colony destined to occupy it shall there establish its brood nest. This brood comb is always taken from one of my choicest stocks, marked A No. 1, in my register, whereby I maintain the quality or secure the improvement of the breed. Then

at noon on some fine day, when the bees are briskly flying, I remove my populous colonies to some other convenient location near by, and substitute for them the hives furnished with empty combs. Externally my hives are all so nearly alike in size, form and color, that the returning bees do not at first perceive the change that has been made, and enter without hesitation. Though evidently nonplussed and confounded at first when missing their stores and companions, and for a time ill at ease, the burdened honey gatherers ere long become reconciled to the change, cluster on the combs, unlade their cargoes, and proceed to rear queens. The artificial colonies thus produced, I thenceforward regard as my true honey stocks. The removed colonies lose nearly all their laboring force, as the departing bees, repairing to their accustomed stands when returning from the field, will be found there in the evening; and will next morning resume work with accustomed if not redoubled energy and zeal; prosecuting it so vigorously if the weather is fine, that the melextractor may be brought into use on the following day. To these honey stocks I also give any drone comb I may happen to have, placing it in their hives, at the sides. It will be readily filled with honey, and even though it should be left empty by the workers, the young queen will rarely deposit eggs in the cells when she begins to lay. While forage continues abundant the melextractor may be employed daily. Without this invaluable instrument the advantages of my mode of management could not be fully secured. How else could we procure a sufficiency of empty combs when needed; or how engage to its utmost extent the gathering ability of such an army of laborers? On the eighth or ninth day, these hives must be opened and examined to destroy supernumerary queen cells, and supply with fresh eggs and larvæ such as have failed in queen raising. They must be examined again two weeks later, to ascertain whether the young queens lay worker eggs; to remove such as do not; and to supply with queens, queens cells, or worker eggs, any that are found queenless. If the queens cells are not seasonably removed, swarms will be apt to issue, and defeat our plans. The extra queen cells may be used for making nuclei.

Experience has taught me that artificial colonies thus made, if the weather prove favorable while pasturage abounds, can produce extraordinary results, as they have no occasion to build combs, and will for some weeks have no brood to nurse. The old removed stocks, too, will in a few days resume labor industriously, their necessities compelling them to begin field work much sooner than they otherwise would.

This method may be employed a second time the same year, in dis'ricts having plenty of fall pasturage.

Finally, it must be stated that in a large apiary the emptying of combs by the machine, when forage is plentiful, is a laborious task; though like all the other work connected with the management of bees, it finds its compensation in the gratifying result. BAHRS.

[Translated by W. S. Dallas, F. L. S., from the "Zeitschrift für Wissenschaftliche Zoologie," Band XVIII. pp. 525-532.]

On the Law of the Development of the Sexes in Insects.

BY PROF. VON SIEBOLD.

The assertion made by Landois, in his preliminary communication, that the eggs laid by insects possess no definite traces of the sexual organs, and that the sex of the larvæ is only developed as male or female, after their escape from the egg-shell, by the influence of difference of food received from without, will not only possess the highest interest for all naturalists who attend to the reproductive history of organic bodies; but, as Landois applies the theory specially to the reproduction of bees, must also produce considerable excitement among the breeders of bees, as Landois in so many words completely denies the existence of the very peculiar parthenogenetic circumstances under which the male bees are developed from eggs.

Landois appeals to his repeatedly successful experiments, by which he thinks it is proved that all the eggs laid by a normal queen are fertilized by her; that in consequence of this fertilization the development of the larvæ in the egg takes place; and further, that these larvæ, when just hatched from the egg, do not possess any definite indications of sex. The sex of bees is rather (according to him) only fixed as male or female, by the difference of nourishment taken from without, according as the workers furnished drone food to those larvæ in drone cells, or worker food to those in worker cells. Landois transferred the bottom of a drone cell furnished with an egg into a worker cell, and *vice versa* the egg-bearing bottom of a worker cell into a drone cell; and by this means from the egg destined by the queen to become a worker, the larvæ from which, in consequence of this transfer, was nourished with drone food, he obtained a drone; whilst from the egg destined by the queen to become a drone, the larvæ of which, in consequence of a similar substitution, was brought up on worker food, a worker was produced.

Whether no error or illusion can occur in these experiments must be decided by practiced and experienced bee-keepers, to whom I particularly recommend the repetition of this experiment. For my part, I can only appeal here to those results which are to be obtained by anatominal and microscopic investigations of the larvæ of insects in course of development within the egg. Taking these into consideration, I feel compelled to express the greatest doubt as to the correctness of the new theory set up by Landois.

From the very careful investigations of various reliable observers in the domain of the developmental history of insects, we know that even in the egg, simultaneously with the development of the different systems of organs of an insect larvæ which has just escaped from the egg-shell, we are already able to distinguish the male or female sex from the difference in the form of the inner reproductive organs Harold, the well-known insect-anatomist, obtained the following results from his accurate investiga

tions of the development of the cabbage-butterfly: The organs which produced by the formative power from the fluid of the egg are, a nervous system, a muscular system, an air-vessel system, and an alimentary system, together with the salivary and biliary vessels belonging to the latter—also, a pair of excretory organs, (namely, the sperming vessels,) a dorsal vessel, and lastly the germs of undeveloped reproductive organs, with a *perfectly, distinc.ly visible distinction of the two sexes.*

On the fifth plate of the under-mentioned work,* he gives an exceedingly instructive and true view of the germs of the reproductive organs of both sexes, as these gradually enlarge from the first formation of the cabbage-caterpillar in the egg up to its full growth and approach to transformation. In figure one, he shows the two reniform corpuscles divided by three constructions into four sections, lying one behind the other, (the future testes,) the two filaments issuing from them laterally (the future ducts efferent), from a male caterpillar which had crept out of the egg a few hours before; whilst in figure two, of the same plate, we may recognize the two bud-like corpuscles with four laterally approximated sausage-like divisions, and two filaments springing from behind, as the future ovaries and oviducts of a female caterpillar of similar age. I will not, however, conceal that Hermann Meyer did not succeed in finding the sexual parts in caterpillars which were only a few days old. On the other hand, Weisemann, in his remarkable work on the embryology of insects, completely affirms the correctness of the observations first made by Harold in butterflies, of the occurrence even in the embryo of the germs of the sexual glands, with distinctly visible distinction of the sex, inasmuch as he could likewise distinguish the rudiments of the sexual glands in the embryos of flies in the egg, although the difference between the germs of the male and female sexual glands is much less striking. In the investigation of a Tipulidæ larvæ, however, Weissmann obtained other results, which I must not pass over. When he sought the genital glands in the embryos of *Corethra plumicornis*, he certainly satisfied himself that in this insect also, as in the larvæ of the true flies, the sexual glands are already traced out in the embryo; but he found that in the larvæ of *Corethra* just escaped from the egg, the distinction is as yet by no means clear: and this distinction does not make its appearance in a marked manner until after the fourth change of skin. From Mecznikow's very accurate embryological investigation in insects it appears also, that although the tracing out of the sexual glands takes place very early in all embryos of insects, their further development does not advance at an equal rate in all such embryos; so that it is only in certain insects that the difference of the sexual organs occurs very early, and indeed already in the embryos; whilst in other insects, on the contrary, it is postponed, and takes place only in the excluded larvæ. In the very young larvæ of a *Simulia* just escaped from the egg, Mecznikow observed a small round genital rudiment, and concluded from this that the rudiments of the sexual organs are formed in the larvæ within the egg.

The same author recognizes, even at the first formation of the embryo in viviparous aphides, the rudiments of the sexual apparatus, as the so-called genital hill. During the further development of the embryo, and indeed very early, this genital rudiment becomes differentiated into ovarian tubes, in which so-called *pseudova* are likewise very soon developed; so that even during the embryonal life of the aphis-embryo, the development of the new generation commences, and goes so far that in the embryo ready to be born two germ chambers occur in each ovarian tube, of which the lowest already encloses an embryo in the first stage of its development.

In *Aspidiotus Nerii*, on the contrary, Mecznikow could not find any genital hill so early produced and differentiated into ovarian tubes, such as he succeeded in distinguishing in aphides. From these known circumstances in the first development of the reproductive organs of insects, it appears that differences occur in it, and that in a certain series of insects the differentiation of the sexual apparatus occurs in the embryos while still enclosed in the egg-shell, whilst in other insects this differentiation only takes place after the exclusion of the larvæ. Landois' theory can certainly find no application to the insects belonging to the first series—namely, the Lepidoptera and Flies, (*Muscidæ*,); and in the second series, in which the *Corethra*, *Simula*, and *Aspidiotus* are to be placed, it may be possible that the still rudimentary and indifferent sexual glands of the larvæ are further developed, in accordance with the male or female type, under the influence of the incepted nourishment.

When, and in what manner, in the larvæ of the bees, the first rudiments and the different differentiation of the sexual glands appears, we have no direct investigation to show. I earnestly recommend such investigation to entomologists for the solution of the question before us. Leuckart, however, has already given an indication in this direction*, when he says, "On the sixth day I find in the female larvæ the first trace of internal genitalia."

With regard to the above-mentioned discovery of Mecznikow's of the development in the embryo of viviparous aphides of ovaries, in the germ-chambers of which the formation of a new generation was already commenced, M. Landois has informed me by letter under date of the 5th of May, that he has succeeded by the gradual application of artificial cold and during the withering of the food-plants, to cause the disappearance of the viviparous aphides (the so-called *nurses*,) and the appearance in their stead of the sexual generation consisting of males and ovipositing females. I cannot doubt the result which Landois has obtained from his experiment; but I will take the liberty of putting the question: "How, in this case, does the production of the two sexes simultaneously with

*Entwickelungeschichte der Schmetterlinge, Basel und Marburg, 1810, p. 1.

*Bienenzeitung 186[illegible], p. 210.

the existence of scanty nourishment agree with the new theory set up by Landois?"

From his experiments on bees, Landois draws the conclusion that the development of the male and female bees is induced, independent of the fecundation or non-fecundation of the ova, only by the difference of food supplied to the larvæ—abundant nourishment producing females, and scanty nourishment males. According to the observations and statements of our most experienced observers of bee-life, this opinion expressed by Landois, as to the different feeding of the larvæ of bees, is not correct. All writers who have treated of the rational management of bees agree in this that the *whole of the larvæ* in the earliest period of their life (up to the sixth day) receive the *same nutriment*, namely, food paste (partially digested chyle-paste) with which the larvæ destined to become queens are fed abundantly and uninterruptedly until their change to the pupa-state; whilst *the larvæ of the workers and drones* afterwards (from the sixth day) receive, instead of the chyle-paste, a coarser sort of food from indigested honey and pollen.*

This identity of the nourishment of the young brood of the workers and drones, seems to have been entirely overlooked by Landois. A difference between the food of the workers and the drones, such as Landois lays so much stress upon, does not exist. As from the observations of our most experienced breeders of bees, the workers are able to rear a queen from worker larvæ before it is six days old, and as the workers can by means of royal food procure a queen from every egg originally laid in a worker cell by a healthy normal queen; but not from an an egg normally deposited in a drone cell; it follows as a matter of course that in bees the sex is definitely fixed beforehand, even in the egg, by the effectuation or omission of fecundation, and not merely defined by the difference of the food of the larvæ.

The development of the eggs, laid by unfertilized queens, from which, according to the experience of all observant bee-keepers, only drones are produced, is not regarded as parthenogenesis by Landois; at least the term parthenogenesis is avoided by him, although he speaks of a primary and secondary drone-brooding, the cause of which is thus explained by him—"that eggs are laid by queens or workers which are furnished *scanty formative materials* from which *weakly larvæ* must be developed and consequently drones."

Whence does Landois conclude that these eggs laid by drone-brooded queens or workers, are furnished only with scanty formative materials? By what investigation has he arrived at the knowledge that from such eggs weakly larvæ and consequently drones must be developed? Has he convinced himself by careful observation and exact dissection of such drone mothers, of the absence of male semen in their sexual organs? Our scientific bee-keepers could state, with regard to a great number of drone-brooded queens, with certainty, that they had remained unfecundated and that they consequently laid unfertilized eggs, though, as experience has proved, capable of development, and from which, whether deposited in drones or worker-cells, only drones are developed. The dissection of such drone mothers, which has been often enough undertaken by persons well acquainted with the subject, has always proved that the seminal receptacle, whether normally developed or rudimentary, contains no trace of male semen.

As Landois refers to the fact that, with regard to the proposition "that drones always proceed from unfertilized eggs," Dzierzon himself doubted his own theory, "because in one experiment on intercrossing German and Italian bees, remarkable and inexplicable phenomena occurred, which could not be brought into harmony with Dzierzon's theory," I must appeal to the arguments which I have already urged against this doubt of Dzierzon's.*

Landois states that by taking my young larvæ of *Vanessa urticæ*, and feeding them imperfectly, he reared from them only males, and by feeding them abundantly only females. This assertion is in complete contradiction to the phenomena which may be observed on *Polistes gallicæ*, with regard to the production of the sexes. Every female of the *Polistes* fecundated in the autumn, after passing through its winter sleep, founds a separate colony at the commencement of spring. It makes a comb for itself, furnishes the cells with eggs, and then still quite alone, feeds the larvæ produced from these eggs until they are full-grown. From these larvæ the so-called workers (that is to say, small female individuals,) are always developed. Male individuals are never bred in the months of June and July; and it is only in August that the males issue from the operculated cells of these colonies of *Polistes*. According to Landois' theory, the larvæ reared by the solitary *Polistes* mother ought to furnish males, as this brood is usually very scantily provided with nourishment, and is indeed often left for a considerable time without food by their mother, which has to complete the business of feeding them without any assistance. This starvation of the brood of the *Polistes* occurs when the temperature becomes cold, when the sky is overcast, and during rain and wind; for when the weather is unfavorable, even if this last for several days, the females of the *Polistes* remain uninterruptedly inactive, concealed behind their combs. As no supply of food is laid up in the combs of the *Polistes*, but the nourishment is always poured from mouth to mouth by the wasp into the larvæ, the scarcity of food often causes the development and growth of the larvæ to go on very slowly, and with interruptions. According to Landois, all these circumstances ought especially to favor the development of male individuals; but until a large number of workers (which, as larvæ, certainly did not revel in a superabundance of food) have

*To indicate only a few of the many authorities who have expressed themselves concordantly as above, with regard to the feeding of the larvæ of bees, I cite the following: Leuckart Ueber die Nahrung der Bienen; Bienenzietung 1855, p. 237; Berlepsch, Die Biene und die Bienenzucht, 1860, p. 102; Kleine, die Biene und Ihre Zucht, 1864, p. 29.

*Wahre Parthenogenesis bei Schmatterlingen und Bienen—English translation, p. 74.

been excluded to assist the mother, no male individuals of *Polistes* are developed.

In order to give more currency to the assertion that in those insects, the larvæ of which are developed in their food, a disproportionate number of females are developed, Landois refers, amongst other instances, to a great number of *Dipterous genera*, the larvæ of which wallow in the excess of their food, and mentions that out of four hundred and three species of *Diptera*, Meigen knew only the females of two hundred and fifty-five. But these examples cannot be adduced as in the least in favor of Landois' theory; Meigen in his well-known "Systematische Beschreiburg der Europäischen Zweiflügel Insecten," very frequently, by his own admission, had only a *single* female, and also very often only a *single* male in his hands, as the type of the descriptions of his species. Such scanty material as this is certainly insufficient to prove it a predominance of one sex over the other.—*Annals of Natural History*, Fourth Series, vol. 2, 1868.

[For the American Bee Journal.]

Alley's New Style Langstroth Hive.

As many of my correspondents ask more or less questions in regard to my new style Langstroth Hive, and as I cannot reply to all of them separately, I now, for the information of such, make one general reply to all questions.

I will say, first, that this hive has exactly the same amount of room inside the frames, for brood and honey, as the shallow form of Langstroth Hive, and contains the same number of frames (ten); and I do not think this number of frames too many. It also has room for thirty-six (36) three pound surplus boxes; and when filled the honey shows to good advantage. There is no difficulty in selling any quantity of honey in such boxes.

The frames in the brood chamber run from side to side, thus making a free and clear passage between the combs to the surplus boxes; and it is impossible for a bee to travel five inches when inside the hive, without going into a box, unless it goes directly from the bottom of the hive up, or from the top down.

The brood chamber is portable, and can be taken off the bottom board at any time. The boxes are put on endwise to the brood chamber and frames, as seen in fig. 2; and the whole is then covered with an outside case or cap, as seen in fig 1. The frames can be removed at any time during the honey season, without disturbing the surplus boxes, as there are no boxes over the frames.

This hive is one of the best for wintering, and it is also a good one for summer. I now have two very full stocks in these hives. One contains a colony that I transferred to it May 20th. The bees are now (June 3d) at work in thirty boxes, eighteen of which are nearly full. The weather has been very warm, and I have not seen them attempt to cluster on the outside. Every bee can work, and none are prevented by heat inside the hive. The hive has a bee entrance seven inches long by $\frac{3}{8}$ inch high; and this is the only ventilation I give it in summer, except to make two one-inch holes in the cap, to let out the heat.

The inside of the hive does not heat up as other hives do, consequently the bees are not inclined to cluster outside in hot weather. It is weather-proof both summer and winter, and needs no bee-house. As it has a deep frame, and a brood chamber that is enclosed by an outer case, and can be ventilated without having a draft up through the cluster, it will be seen at once that no hive is better adapted for winter than this one.

I have found that bees will enter and commence work in side boxes earlier than they will in boxes set over the frames. I know it is hard for those to believe this who have the top-box idea on the brain; but it is a fact, and I have found it so from experience. Mr. D. C. Batchelder, of Newburyport Mass.) has a stock of bees in one of these hives that had filled thirty-six boxes up to June 3d, but they had more or less comb to start with, in all the boxes.

The one great objection to these hives is the cost, but they will be found cheapest in the end.

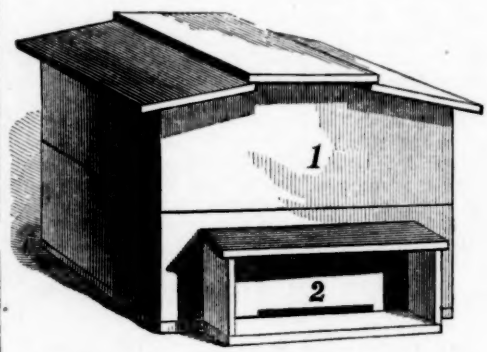

Fig. 1, represents the hive as it appears when in full operation.

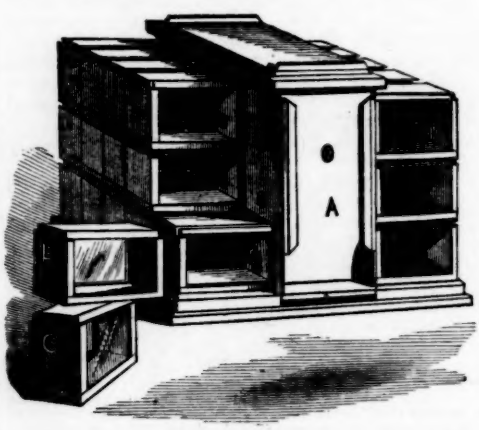

Fig. 2, shows the brood chamber and surplus box arrangement.

The brood chamber has an observing glass in the rear.

The outer case is made in two parts, which can be lifted off the bottom board, as represented in fig. 1. The grain of the wood all runs the same way in this hive, and there is no shrinking and opening of joints, to let in water every time it rains.

In making this style Langstroth hive it was not my intention to alter in the least the principle of the Langstroth frame and any alteration that I have seen or heard of has been a backward step in the construction of movable frames. How the Langstroth frame can be altered to make it more simple or to answer better the purpose of the bee-keeper, I do not know. My hive is simply a new style of Langstroth hive. The frames do not rest on the bottom-board, and have no tin fixtures or any thing else about them for the purpose of cheating Mr. Langstroth out of his patent right. Any hive that does not have the simple movable frame that Mr. Langstroth claims as his invention, is only fit for firewood; and all other frames are worse than none at all.

What I claim for my hive is this: First. It will winter a colony of bees as well as they can possibly be wintered, anywhere, on their summer stands, and with but little trouble to prepare it for winter. Second. It will allow of more room for surplus boxes, with less expense than any other hive in use. Third. It needs no other house, summer or winter. Fourth. The bees can reach the surplus boxes in less time and with less labor, than in any other hive yet devised. Fifth. The boxes used for this hive, will, when full of honey, sell more readily and at a higher price, than any other style of surplus box. In fact, this kind of box is just what dealers want to purchase.

In the September number of the Bee Journal, I shall give my plan for wintering in this hive. I will answer all inquiries made in regard to it, through the Bee Journal. H. Alley.

Winham, Mass.

[For the American Bee Journal.]

The Shallow Langstroth Hive.

Mr. Editor:—It is not probable that the readers of the Journal have forgotten the animated controversy of 1868, with reference to the shallow Langstroth hive.

I have used that form of the hive some eight or ten years, and although there are some good points connected with it, still *for this latitude* (about forty-two and a half degrees, north), I am becoming more dissatisfied with it the longer I use it. It seems to me that any one, with even a limited experience in bee-keeping, must be aware that it is not a safe hive for wintering in the open air. Neither is it good for the six or eight weeks between the winter and warm weather. My bees are always wintered in a dark room or cellar, and I have sometimes thought that the hives contained less bees, after being out a month, than when first taken from winter quarters.

It occurred to me last season, that these hives could be altered, and made not only deeper but better in some other respects. If any one using the shallow hive would prefer, and be satisfied with one twelve inches wide and twelve inches deep, holding eight frames instead of ten, he can with small expense alter them to that form. I mean small expense compared with laying aside his present stock of hives, and beginning all anew.

I have altered some ten or twelve, and will give a description of the process. My hives are fourteen and one-eighth inches wide, and to reduce the width to twelve inches, would take off one and one-sixteenth inch from each side. A board that thickness set in on each side would give just the width. But it is difficult to get boards of that thickness, and besides I wanted an air space between the two. The course decided upon was this. The side partitions are cut just the length of the inside of the hive and twelve inches wide, planed to eleven-sixteenths thick. A narrow ledge, three-eighths inch thick, is tacked around the edge on the side next the outside of the hive to give the air space; and when these partitions are set in, firmly fastened to the outside with screws and nails, they are twelve inches apart and two inches higher then the other parts of the hive. Strips, two inches wide and of the length of the hive outside measure, are set edgewise on the original sides, nailed down through with long floor nails, and fastened to the inside partition sidewise with screws. The ends, which are one and three-fourths inch plank, are raised in the same way, nailed down through, and also receive nails in the ends through the side pieces. A ledge is nailed around, five-eighths from the top, for the cover to rest upon as before; I now have a hive containing bout the same number of cubic inches, and two inches deeper, without losing any top-room, for the same honey-board is used as before.

Instead of single sides, it is now double, with a small air-space between. The expense, aside from furnishing new frames, is about one-eighth the cost of the original hive—that is, the cost of a new hive would alter about eighth.

I have pieced down a few frames, making strong work; although the expense is perhaps more than the cost of new frames, still it is better than transferring the combs. I will not occupy space, to describe the process of piecing down, as probably no one will wish to adopt it.

Perhaps I should not adopt this form of hive, if I should begin anew; but think it is very good, and far preferable to the shallow form, for this latitude, and the only way to get rid of that form without throwing away my whole stock of about fifty hives.

Calvin Rogers.

West Newbury, Mass., May 29. 1870.

All the choicest spare honey should be removed from the hives, before the delicate whiteness of the combs becomes soiled by the travel of the bees, or the purity of the honey is impaired by an inferior article gathered later in the season.—*Langstroth.*

[For the American Bee Journal.]

Introducing Queens.

I have been introducing queens for the last three years in the manner recommended by Dr. H. C. Barnard, in the June number of the Journal (page 256, vol. 5), and was not aware that it was used by one besides myself. I never lost but one queen in introducing, and I think she was injured before I put her into the hive.

The hive should never be much smoked before the common queen is removed, as she may leave the combs, or if she does not, the "drunken" bees will fall off while you are examining them, and give you much trouble.

As soon as I have found and killed the native queen, I replace all the combs in the hive, put on the honey board *without the surplus boxes*, and blow in tobacco smoke until all the bees are stupefied. I then take some honey (*from one of the combs in the hive*) in a large spoon, and put the queen into it so as to get her thoroughly covered; then pour queen, honey, and all, right into the mass of bees, and know that ninety nine times in a hundred she is all right. Dr. B. is right in saying that unfertile queens may be introduced in this way as safely as a laying one.

I cannot resist saying (even at the risk of having Mr. Quinby again "tell that a little learning is a dangerous thing," &c.) that I have found queen cells to hatch often on the *eighth day*, and very often on the *ninth*.

D. M. WORTHINGTON.

St. Dennis, Md.

☞Whatever may be the case elsewhere, the *eighth day* is certainly, *here*, the grand climacteric in incipient queen bee life. We had five queen cells maturing in a hive, and intended to dispose of them on the first of June, that being the eighth day; but were prevented from doing so by a rain storm. Next morning, on opening the hive, we found one queen at large, three queen cells torn open, and one still closed—which proved to contain a dead larva. So much for unavoidable procrastination.—ED.

[For the American Bee Journal.]

Replies and Explanatory Remarks.

In Volume 5., No. 10, page 202, our friend Thomas is after Gallup a trifle; and, in answer to his inquiries, I will say that I suppose the reason for the sealed brood perishing and becoming putrid in so short a time, was on account of the state of the atmosphere in the hive, caused by famine among the bees. I have read that, in the time of the Plague in London, meat would become putrid and fall from the hooks in the butchers stalls in from twenty-four to forty-eight hours after being dressed. I know there was a very sickening smell on opening a hive when the bees had become helpless from famine, even where they had no brood. Not having scientific knowledge, I can only guess at the cause, Yankee fashion.

Then comes another question; and the answer is that the wisdom was not in the eggs, but in the bees. The bees would refuse to cluster on the eggs, and would leave them for other parts of the hive, even in a very strong stock. In some seasons I have seen nearly the entire swarm clustered on the outside of their hive; yet they gathered barely enough to keep the queen laying and preserve themselves from actual starvation. This would be early in the season. The combs were filled with eggs, yet the bees refused to brood them, until the flowers produced honey. Then all the bees would enter the hive and the eggs would hatch. At such times I have heard people say—"My bees have hung out, and I have watched them these three weeks and still they have all swarmed and gone off, and I did not see them when they went!" And I would reply that they had gone *into the hive*, instead of going off. "Oh no," they would say, "that was impossible, because there were so many bees, they could not all get in," etc. Understand that I have seen bees cluster out for want of room in the hive, as well as cluster out to prevent the eggs from hatching and the brood then starving. And here, I will remark that the Italians scarcely ever cluster out before swarming.

Why the eggs of some queens never hatch, and some hatch drone eggs altogether, is one of the puzzles that I have not yet mastered. About some of my queens being partially fertilized, I stated the facts just as they occurred; that is, that the queens laid part worker eggs and part drone eggs, but mostly the latter, and all mixed up promiscuously. At the same time that I had those queens, a correspondent (I think it was Dr. T. B. Hamlin, of Tennessee) wrote me that he had one queen in the same condition—that is, partially fertilized. I call it by that name, as I know of no other applicable; others can call it what they choose. I have stated the facts, but may not be able at present to assist any one out of the "fog." I have never seen queens fertilized but once; therefore cannot say anything about those that are claimed to have been fertilized more than once.

E. GALLUP.

Orchard, Iowa.

[For the American Bee Journal.]

Buried Bees Resurrected.

In the January number of the Bee Journal, page 137, is published some of my experience in burying bees, to winter them; and also my intention to bury ten hives the past winter. This intention was carried into effect on the 16th day of November last, by burying my ten lightest swarms, (save one, which I did not consider worth trying) in a coarse gravel, placing them about twenty inches under the surface. These bees had so little food that I despaired of wintering them above ground by any means *I had*.

After being underground about four and a half months, they were dug up on the first of April, considerable frost being then over them. Two of them had died from starvation, and one from some other cause. Seven are living, with a good prospect of doing well. Seven swarms were thus saved by this means, without which all would have died. They came out pretty badly moulded. I had put to them a ¼ inch

ventilating tube, from the top of the hive (but under the top board) to carry off the *moisture*. That tube, (there being but one to a hive) seemed to be without good effect. I think with two tubes, the one at the bottom and the other at the top of the hive, the latter extending highest in the air (as described in a former number of the Bee Journal,) a good ventilation would be effected, and the mould prevented.

In burying previously, I gave my bees no ventilating tubes, and as that applied this time was evidently without effect, if I should ever try more, I would either give them two tubes, or none at all. One thing is plain to me, namely that bees will not die for want of air, by being buried in winter time.

ALONZO BARNARD.

Bangor, Maine, May 13, 1870.

[For the American Bee Journal.]

Experience with Foulbrood. Bees in North Carolina.

I have been contending with putrid foulbrood some ten years; have tried various experiments; put the bees in new clean hives, with new combs and pure honey, starving the bees two or three days. But I have had the best success by removing the queen in its first stages, keeping the colony queenless from one to three months, according to the aggravated appearance of the malady, then double up to make strong. I have had stocks treated in this manner, do well for three years after in succession, while other remedies failed.

But where the malady does not show itself till late in the season, or has assumed a malignant and advanced stage, I have yet to learn of any sure remedy but fire. I deem it very contageous.

Since removing to North Carolina, I have not as yet found any case of foulbrood of either kind, and hope I shall not. I have examined stocks in various parts of Wake county.

Apiculture, I am glad to say, is receiving increased attention in this section, though it does not command the attention it deserves. Only a small part of those who keep bees standing about their premises, have left the square box or hollow log. A few are trying the movable comb hives. Among these are Messrs. Hunter and Shultz, of Salem, who, I learn, are successful apiarians. The western part of the state seems at present to yield larger supplies of honey than the middle or eastern portions. Alsike clover will aid very materially in increasing the quantity and improving the quality of honey here and elsewhere, as well as add largely to the fodder crop.

I am pleased to see by the correspondence of the American Bee Journal that people are finding out that all is not gold that glitters, in regard to the Italian queens and bees, impregnation by one drone, and that for life, &c. I have had some careful experience in these matters, and perhaps will report in the future.

J. CURTIS.

Raleigh, N. C., May 23, 1870.

[For the American Bee Journal.]

Table of Days.

The following table is not, of course, infallible, as every bee-keeper knows; but it is an approximation.

After collating many books, the following is believed to be a *fair average* of the times so frequently desirable to know. If the inquirer will place the word *about* before these figures, he will not be far out of the way.

TWENTY days from the laying of the first drone *egg* the queen cells are begun.

EIGHT days after queen deposits an egg in a queen cell it is sealed.

ONE day after the queen cell is sealed the first swarm goes off.

SEVEN days after the (first) swarm leaves listen for piping.

TWO days after piping is heard, look for second swarm.

FOURTEEN days after the first swarm the virgin queen leaves to meet the drones, if no second swarm issues.

TWO days after wedding tour the queen lays eggs.

ONE day after hiving, the virgin queen of a second swarm leaves to meet the drones.

THIRTY days after hiving a large early swarm, the same swarm *may* throw off another.

APIS.

Holmesburg, Pa.

[For the American Bee Journal.]

Natural and Prolific Hardy Queens.

How to secure them in quantities, for commercial purposes.

Having tried and failed to secure either prolific or long-lived queens, by the usual means mentioned by all authors and writers on bee-culture, at any season or under any circumstances, when queens were raised in divided stocks, or stocks deprived of their queens—they being *queenless* at the time of starting and raising the young queens—my experience corroborates the statements of Bidwell Bros., of St. Paul. (Minn.), of A. Grimm of Jefferson, (Wis.), and of E. Gallup of Orchard, (Iowa), and of numerous others who have given direct evidence on this important question; besides that furnished by the indirect evidence of correspondents in the BEE JOURNAL. The correspondents say that after the safe introduction of an Italian queen, "in from one week to two months, as the case may be," we find them queenless, the queen having been superseded, and queen cells started. And the desire is to know why, after having once accepted a queen, they should kill her and raise another. Such being forced queens are without true vigorous vitality, their course was soon run, their part played out, and they died. Their death has always been regarded as an accident, and explained away as such by queen-raisers,

This has always been my experience with

forced or artificially-raised queens reared in my own apiary from queenless stocks; and I have had to re-queen some colonies from one to five or more times in the season, and finally had to double them up in the fall—having been unsuccessful in securing a healthy long-lived queen.

As there is a great difference, and yet usually no distinction made, in *artificial swarming*, this difference must be kept in view, to properly understand the question. I assume,

First—That queens raised in a *queenless* colony are always worthless—taking natural queens as a standard—as regards prolificness, hardiness, or longevity.

Second—That queen cells taken from a large colony, and having been started when the colony was under the swarming impulse and the egg then laid, produce natural queens, with all the vigor of the parent stock.

Third—That queens of this second class, when given to divided stocks, are entirely different BIRDS, from such a sa queenless stock would have raised; and that the queens of the second class prove to be as hardy, as prolific, and as long-lived as their mothers.

Having devised or invented, proved and tested, a means of getting natural queens started in unlimited quanties in a swarm, under the influence of a prolific queen, I will describe my mode and means of doing so.

Price's method of securing natural, prolific and long-lived queens for artificial swarming, or for other purposes.

In the early spring, or as soon as desirable, proceed to stimulate by liquid feed, "honey, or sugar syrup," any known hardy or prolific queen, placing frames of empty worker comb between the brood combs in the hive as fast as the bees can duly cover them. Or instead of empty combs, insert frames of brood from another hive, as fast as the bees can take care of and cover them. Proceed thus till you have fifteen frames of brood. When the hive is full enough of hatched bees and drones, remove all but eight frames of brood, shaking off all the bees back into the hive, and using the removed comb to aid weak stocks. Place the eight combs in a Casket hive or other hive having division boards, crowding the bees that covered the fifteen frames on the eight. Now continuing the daily stimulus of liquid feed, the bees soon get under the swarming impulse or fever, and start more or less queen cells. When the cells have been supplied with eggs three or four days, remove all the combs with cells on them to a large queenless stock or a stock purposely deprived of its queen. Fill up the casket or other hive with combs full of brood taken from some other hive or hives; and by keeping up the daily stimulus of feeding, from ten to twenty natural queen cells can be taken from that hive every week. Remove all the queen cells or combs with queen cells at once, and replace them at once with combs full of brood; and under no circumstances put empty combs in this hive as long as queen cells are wanted. The queen cells in the queenless hive, are to be cut out as soon as capped, and placed for safe keeping in Dr. Jewell Davis'

Queen Nursery,

or placed in divided swarms, or used by any other of the known means of safe keeping and pure fertilization. The Queen Nursery is an indispensable institution for those who may practice the raising of queens on a large scale.

JOHN M. PRICE.

Buffalo Grove, Iowa.

P.S.—In his "Review of the May number," your correspondent, Mr. Kretchmer, is certainly in error when he says that "nearly half, if not more, of our most intelligent bee-keepers prefer side to top opening hives," if by *ours* he means *American* bee-keepers. A census of enumeration would, I think, reveal the fact that at least eigth-tenths of the bee-keepers of this country, who use movable comb hives, prefer the top-opening form; and the number is annually increasing. In Europe, and especially in Germany, where improvements make slow progress, the case may be different, because there some of the most prominent bee-keepers, who as yet give tone to public sentiment, are so wedded to their antiquated notions, and so prejudiced against *innovations*, that they cannot give any ideas not originating with themselves a fair trial. In many matters of mere practice they stick just where they stood thirty years ago. Dzierzon to this day rejects the Berlepsch frames; and Berlepsch, in turn, ridicules the Dzierzon twin hive. Dzierzon, who introduced the Italian bee, continues to regard it as at the head of the race, and will not try any other variety. Berlepsch, who failed in his first experiments with Italians, says that, except in appearance, they are not better than the common bees. So with others, in other things. These men, so eminent and advanced in some points, are in other respects fogies still. Each will probably adhere obstinately to his own favorite form of hive, and their friends will follow them. But to be governed by their example in this, is to lag far in the rear. I am glad to see that Mr. K. himself is preparing to take passage in the EXPRESS train, for he tells us that, *for his own use*, he makes "no other than side *and* top-opening hives." That will do for a start. By and by he will reach the goal. We travel fast in this country.

By "fixed" frames we understand such as are not movable *laterally*, but have a permanent position assigned to them, which the bees commonly make more *fixed* still by means of propolis. To adopt and use such, is to go half way back to the old box system. On that principle railroad men should abandon *steam* and run their locomotives by *horse power!*

If the spring is not favorable to bees, they should be fed, because that is the season of their greatest expense in honey, for feeding their young. Having plenty of honey at that time, enables them to yield early and strong swarms.—*Wildman.*

After a wedding, it was formerly a custom to drink honey dissolved in water, for thirty days. Hence the origin of the honey-moon.

[For the American Bee Journal.]

Robbing Bees.

MR. EDITOR:—I have been experimenting with bees for the past few years, and have frequently had some trouble with robbers. This spring, however, exceeded all my previous experience. The old honey being pretty generally used up, and the new being cut off by the cold spell we have had here, made my bees more than usually inquisitive, and they soon found a weak colony. Being from home for nearly a week, on my return I found my weak stock entirely cleaned out of honey, and the bees nearly starved. I tried all the remedies I ever heard of, even camphor, an article highly recommended in the Bee Journal, all without effecting any good. I put the colony in a cellar for a few days, but when I took it out, the robbers would invariably return. I then tried a new plan, at least one altogether new to me, although others may have tried it before. I do not remember ever seeing it in print, hence I will give it for what it is worth. I first closed up the hive for a considerable time, until a large number of bees had collected on the outside; then I let them in, and after a quantity had entered I confined them till late in the day. Then let them out, which soon showed me where they came from. Having thus learned that nearly all came from one hive, I simply exchanged hives and all was well. This, however, might prove destructive to the queens, and I would therefore advise that the queens be caged in case they are valuable ones or could not readily be replaced. WILLIAM BAKER.

Gebharts, Somerset Co., Pa., May 18, 1870.

[For the American Bee Journal.]

Alleged Error. The Diamond Hive.

MR. EDITOR:—It is seldom that I trouble the Press: only when duty calls upon me to rebut error.

It appears that in the May No. Vol. V. of the AMERICAN BEE JOURNAL Dr. Conklin has made an erroneous statement with regard to me. But as the Doctor has "bee on the brain," I will have a little charity for him, hoping that he will be enabled to make some of his mistakes right. He professes to be honest, and says that we claim to be honest or truthful people, down here in Quakerdom. This, doctor, is just what I want.

In speaking of the Michigan State Fair, Dr. Conklin say he was there and received the first premium and diploma, over thirteen other hives in competition. Now let us see about that, as he refers to as practical bee-men or Committee as there are in the United States. Well, we do not want to enter into any discussion with our friend but simply say in this article that when the doctor wants facts in the case, I will throw all the light necessary upon it—which will then have a very different bearing, and the public will think differently.

The doctor alludes to me when he says, the chairman of the Committee on Beehives at the Bee-keepers' Convention. He says that a majority of that committee was in favor of his hive, if he mistakes not. I shall not attempt to give the proceedings, as it is not necessary now. If the doctor wants the whole, and the whole only, then I will give it, so that people can form their own opinion.

But I wish to correct the error. The doctor says the chairman of that Committee was interested in territory for the Thomas hive. This is a false statement. I never owned nor applied for any territory, nor even a single hive. I had a few hives of that patent, had tested them and was enabled to judge of their merits. Furthermore, the Committee was unanimous at first in their decision; but one of them, after some time —facts need not not now be stated—hesitated to sign the report. But finally they all did agr e and sign it, and it was approved by the Convention. Now does this stand as the doctor says? He has given alleged facts in the case—do they compare? I can give proof of what I have written, and he cannot. Owing to my poor health, I omit giving the facts in full, and will give the public the benefit of them at some other time.

WELCOME CAMPBELL.

Royal Oak, Mich.

[For the American Bee Journal.]

Tree Climbing and Bees in Borneo.

Thinking it may interest your readers to hear further from Mr. Wallace, I quote his description of the Dyak mode of climbing, which method is constantly used in order to obtain wax, which is one of the most valuable products of the country.

"The very day after my arrival in this place (Merryville, Borneo), I was so fortunate as to shoot another male of the small orang, the *misas kassir* of the Dyaks. It fell when dead, but caught in the fork of the tree and remained fixed. As I was very anxious to get it, I tried to persuade two young Dyaks who were with me to cut down the tree, which was tall, perfectly straight, smooth-barked, and without a branch for fifty or sixty feet. To my surprise, they said they would prefer climbing up it, but that it would be a good deal of trouble; and after a little talking together, they said they would try. They first went to a clump of bamboo that stood near, and cut down one of the largest stems. From this they chopped off a short piece, and splitting it, made a couple of stout pegs about a foot long and sharp at one end. Then cutting a thick piece of wood for a mallet, they drove one of the pegs into the tree and hung their weight upon it. It held and this seemed to satisfy them for they immediately began making a quantity of pegs of the same kind, while I looked on with great interest, wondering how they could possibly ascend such a lofty tree by merely driving pegs into it, the failure of any one of which at a good height would certainly cause their death. When about two dozen pegs were made, one of them began cutting some very long and slender bamboos from another clump, and also prepared some cord from the bark of a small tree. They

now drove in a peg very firmly at about three feet from the ground, and bringing one of the long bamboos, stood it upright close to the tree, and bound it firmly to the first two pegs by means of the bark cord and small notches near the head of each peg. One of the Dyaks now stood on the first peg and drove in a third about level with his face, to which he tied the bamboo in the same way, and then mounted another step, standing on one foot and holding by the bamboo immediately above him, while he drove in the next one. In this manner he ascended about twenty feet, when the upright bamboo becoming thin, another was handed up by his companion, and this was joined on by tying both bamboos to three or four of the pegs. When this was also nearly ended, a third was added, and shortly after the lowest branch of the tree was reached, along which the young Dyak scrambled and soon sent the misas headlong down. I was exceedingly struck by the ingenuity of this mode of climbing, and the admirable manner in which the peculiar properties of the bamboo were made available. The ladder itself was perfectly safe, since if any one peg were loose or faulty, and gave way, the strain would be thrown on several others above and below it. I now understood the use of the line of bamboo pegs sticking in trees, which I had often seen and wondered for what purpose they could have been put there."

The honey bee of Borneo very generally hangs its combs under the branches of the *tappan*, a tree which towers above all others in the forest, and whose cylindical trunk often rises one hundred feet without a branch. The Dyaks climb these lofty trees at night, building up their bamboo ladder as they go, and bringing down gigantic honey-combs. These furnish them with a delicious feast of honey and young bees, beside the wax which they sell to the traders and with the proceeds buy the much covet-brass wire earings, and gold-edge handkerchiefs with which they love to decorate themselves. In ascending *durion* and other fruit-trees, which branch off from forty to fifty feet from the ground, I have seen them use the bamboo pegs only, without the upright bamboo which renders them so much more secure."

In Celebes, he writes, "flies and bees are abundant, and of these I daily obtained new and interesting species." He also mentions finding bees on many of the islands, which I presume were *Apis dorsata*, as he says nothing to the contrary.

Those who have experienced considerable excitement in handling queens of rare beauty, will appreciate the following, from the same author:

"About the beginning of January I found a beautiful shrub with large white leafy bracts and yellow flowers, a species of *Trussænda*, and saw one of these noble insects (a new species of Ornithoptera or bird-winged butterfly) hovering over it. I found it to be as I had expected a perfectly new and most magnificent species, and one of the most gorgeously colored butterflies in the world. Fine specimens of the male are more than seven inches across the wings, which are velvety black and fiery orange, the latter color replacing the green of the allied species. The beauty and brilliancy of this insect are indescribable, and none but a naturalist can understand the intense excitement I experienced when I at length captured it. On taking it out of my net and opening its glorious wings, my heart began to beat violently, the blood rushed to my head, and I felt much more like fainting than I have done when in the apprehension of immediate death. I had a headache the rest of the day, so great was the excitement produced by what will appear to most people a very inadequate cause. It is true that I have seen similar insects in cabinets at home; but it is quite another thing to capture such oneself, to feel it struggling between ones' fingers, and gaze upon its fresh and living beauty—a bright gem shining out amid the silent gloom of a dark and tangled forest. The village of Dobo held, that evening, at least one contented man."

And now I fear our matter-of-fact men with no poetry in their nature, will have their patience exhausted, and cry for something more practical about *Apis dorsata*. But our knowledge of this species of the honey bee is as yet too limited to satisfy their curiosity. I will however endeavor to make out a good case for them, and think there may be some extenuating circumstances in their favor, fully justifying their ferocity in the instances given by Mr. Woodbury.

E. P.

New York.

[For the American Bee Journal.]

Novice and Honey.

MR. EDITOR:—We are now, at this date, (June 11,) revelling in a flood of sweets, the product of the united efforts of fifty strong stocks of Italians and hybrids.

We have just now completed our first thousand pounds (1,000 lbs.). We put it up mostly in small wide mouthed jars, holding one pound each, which retail readily at twenty-five cents, and are just the thing when a little is wanted for sickness. We get the jars, pound and two pound, from Messrs. Fahnestock, Fortune & Co., Pittsburgh, Pa. By taking a quantity the expense is but a trifle. A very neat gummed label is made by Messrs. Seaton & Walton, Salem, Ohio, at a price far below what ordinary printers would charge for labels without gumming. Our fifty stocks average about four pounds each on a fine day, so that you see that two hundred pounds per day keeps us pretty busy.

We have a great many visitors, as our way of managing bees is quite a "sensation." We have many times thought that we should like to have them to come all at once, and then we should not have to explain and answer questions so many times over.

And just here, Mr. Editor, permit me to say, although it may seem harsh and unkind, that it is quite impracticable for me to answer all the letters of inquiry received, sometimes a half dozen a day, all asking the same thing, perhaps, and the replies would require a long letter to each. Would not the queries be much better asked through the Journal? Any such inquiries we will answer in full to the best of our ability.

And now, Mr. Editor, we are going to invite

you and as many of the readers of the Journal as can conveniently, to make us a visit and go through our apiary, melextractor and all. 'Tis a fine June morning, and we will go ahead and "operate" just as though you were not around; and, so far as we can, will try and anticipate your questions.

Here we are, and here are our tools; very simple it is true, yet they suit us very well, and when we happen to mislay one of them, we find to our cost that they are very necessary.

We first put our pants inside the tops of our stockings, (no remarks about our looks, if you please; and, by the way, we are going to insist that not one of you shall say one word about anything you see, at least for to-day,) as the the young bees have an "*on*pleasant" way of crawling on things indiscriminately. That long turkey-quill is not to stick in our cap, but to be put in our left-hand vest-pocket, and in the right-hand pocket we place a small screwdriver, such as is used with sewing machines. A millinet veil with rubber band around the top, to slip on our hat, completes the outfit, when tucked inside of the collar at the lower edge. It is true, we can work without the latter; but those same young bees in a person's neck and hair are rather a bother. What, hives flat on the ground? Is that the best way? In our opinion *certainly*, as you will see presently. We do not know how we could have them stuck up on stakes and benches, if we wanted to.

This hive was emptied of every drop last Monday, so that the sealed honey you see here has all been gathered in five days. We prefer to take it out just before sealing, or when it shows only a little sealed near the top of the frame. Yes, they are inclined to be a little cross when the hive is first opened: but observe that when we shake the first frame full on the sawdust in front of the hive, they become alarmed, even if hybrids, and commence filling themselves with honey. So we are all right. No jarring the frame while removing it. Now, holding the projecting end between the thumb and finger, slip the middle finger down against the end-piece of the frame to prevent them breaking apart, as they will sometimes do when very heavy. All the bees cannot be shaken off, so here the turkey-quill comes in play. While the frame is held in the left hand, the bees can be brushed away by the other; and, as many of them will go right back if we stand here, we will meanwhile walk towards the melextractor. A lady has charge of that, uncaps the cells and removes the honey, being careful not to throw out the unsealed brood; and does this better probably than you or I could. No, we cannot sell that knife, used for uncapping, but you can easily make one. Get a long thin-blade knife (cost sixty cents), bend it twice near the handle, so as to stand like a trowel (keep a wet cloth around the blade meanwhile, so as to prevent drawing out the temper, after removing the handle); now grind both edges as sharp as you can, refit the handle, and your troubles are over.

As soon as we get out three or four frames, we commence bringing them back and fill up the vacant side for the bees to cluster on. Save all drone comb for the second story. When basswood commences to blossom, we shall only remove the honey from that. We wish now to get all the white clover honey we can, and let the bees take theirs from some other source. If any sealed drone brood is found, after emptying the honey slice their heads off. There will be drones enough any way.

We are informed that the honey is up to the wirecloth; so the whole inside is lifted from the melextractor, and the contents poured into a large can with a fine wirecloth strained over the top and a faucet in one side. A tin basin, with a circle of the glass jars set inside, is turned as fast as one jar is filled, to the next; and while they are filling, the girl who presides over them corks them, and puts on the labels. Do not stop to look at her too long, or she may get embarrassed and let the jars run over into the basin—which is nothing serious indeed, only some trouble. We had six hundred labels printed for white clover, and they are all gone now, and this is only June 11th. Good for the bees.

We are going to prevent swarming as far as we can, but when they get determined on it, remove the hive and give them a new one and a new queen. We find queen cells in many of the hives now, but remove them all.

Now, as we have had our say, any further questions, to be answered through the Journal, will give us great pleasure.

One thing more. On the 5th of June we noticed that the red clover blossoms contained an unusual quantity of honey. In fact, quite a large drop could be squeezed out; and on looking over the yard we found a great number of Italians very busy on them. We immediately started for a clover field, but were prevented from making any observations by a thundershower—the first rain we have had for two weeks. As we have had considerable more since then, the bees have not worked on them any longer; so that our clover honey may be in large part red clover after all.

Hoping to be able to give you as favorable an account next month; and that all the readers of this are doing equally well, is the hearty wish of

NOVICE.

[For the American Bee Journal.]

The Langstroth Patent.

MR. EDITOR:—As you have inserted Mr. Langstroth's claims in the February number of the BEE JOURNAL, vol. 4, and as every new beginner should be posted in regard to any patent hive that he may purchase, and not "go it blind"; and, furthermore, as I have a great many inquiries from new beginners, about whom to purchase the right to the movable combs from, &c., &c., suppose, at my request, you publish the following paper.

I wish to have the reader distinctly understand that there is no collusion between Mr. Langstroth and myself; or, in other words, that I am not an agent for Mr. Langstroth, and have no other object or interest in recommending his patent than to see the right (or what I believe to be right) prevail.

We are all more or less interested in this matter. I have yet to see a hive that I think is any better than a hive on the Langstroth principle. We can, any of us, *vary the form* to suit our own whims. As the old Indian said, if you all thought exactly as I do, you would all be after my squaw; and then there would be an awful muss for sure.

ELISHA GALLUP.

Report of the Patent Office Examiner in Charge.

UNITED STATES PATENT OFFICE,

September 20th, 1866.

In the matter of the application of L. L. LANGSTROTH *for the extension of Letters Patent granted October 5th*, 1852, *and re-issued May 26th*, 1863, *Improvement in Bee Hives.*

The examiner in charge of the class to which this case belongs has had occasion at various times, as at the present, to investigate the claims embraced in the patent upon which the application is based, and has been unable to find anything in the archives of this office, of prior date to the grant of the original patent to this applicant, which could in any way interfere therewith.

These investigations developed the fact that Huber, Munn, and others, prior to such grant, had used comb frames, but in the re-issue above referred to, these were cited and described by this applicant, and the difference was so clearly defined in the specifications and claim that it was not deemed possible that any misapprehensions as to the scope of the claim or of the invention could arise, nor does any explanation thereof appear to be necessary now. There can be no doubt that the action of the Office in allowing such claim was correct, in view of the information then in its possession, and it only remains, therefore, in determining the question of novelty, to consider the evidence developed by the opposition; and before doing this, it may be remarked that in all other points, this application appears to be one of those peculiar cases especially contemplated by the statute in its provisions for the extension of monopoly.

This much is premised, and further, that in view of this fact, the evidence upon the question of novelty which should lead this Office to refuse the grant prayed for should be such as that not a shadow of doubt could remain that this applicant was not the original and first inventor of the improvements in controversy; it should be clear and unmistakable.

Any attempt to analyze or do justice to the testimony of the opposition, or to do more than briefly state conclusions in the brief time allotted for presenting this report, would be utterly impracticable. It might perhaps be sufficient to state that the mass and weight of evidence offered by the opposition comes from interested parties; parties to, or interested in, conflicting patents, who have laid themselves liable to suits for infringements, and it is yet an open question, undecided by the courts, whether or not they can use the inventions in which they are interested without license from this applicant; this, in connection with the fact developed by the rebutting testimony, and by the exhibits, such as letters, publications, &c., showing that at one time or another, since the invention began to be appreciated, they have directly, or by implication, conceded priority to Langstroth, and in some instances, as in case of the Harbisons, have applied for rights under the Langstroth patent, deprives their subsequent depositions, now presented in opposition to this application, of any claim to consideration. There is one principal witness, not embraced perhaps in this class above referred to, whose deposition would seem to require at least some notice; that of E. Townley, and of those brought forward to corroborate the same, were it not for the fact that when confronted with the facts developed by the cross examination, and by the rebutting testimony and exhibits, its bears its own contradiction on its face. A few instances are cited, as serving to show the correctness of this conclusion. He says that in 1848, and for several years afterwards, in New York city, and subsequently, at Mount Auburn, near Cincinnati, he made a hive called "Townley's Patent Premium Hive," which contained the identical features covered by the Langstroth Patent so far as relates to the movable comb frames and spaces; that the hive so called and so marked was the "same hive"; in answer to this, this "same hive," is produced on behalf of this applicant, and it is perfectly evident upon examination, that this hive never did contain the features which he swears it did, and never could have contained them. This is further established by testimony showing the purchase from Townley himself, and continuous use since, of this and other hives of the same construction as this.

If this statement of Townley be true, it is a little remarkable, that of all the many hives which he swears he so made, not one is produced to substantiate him, when such rebutting exhibits are so easily produced. Townley's work on bees published in New York in 1848, where he swears he still continued to make and sell movable comb frame hives, described two constructions of hives, neither of which embraces anything like the features in controversy, but one of which is the "Townley's Patent Premium Hive," which he swears is the "same hive." There appears no excuse whatever for this witness, unless it be found in a desire to appear consistent with himself. He made a hive marked Patent, &c., as above, but admits upon re-examination that it was not patented. He has published "Townley on Bees," which purports to be "copyrighted," which he admits never was; he advertised in that book to sell individual rights for "five dollars cash," when he had no right himself, that he could dispose of; and now, to be consistent, he sets himself up as prior inventor of a thing which his own admissions, made at the Chicago Fair in 1859, in the presence of gentlemen whose testimony is unimpeachable, show conclusively that he never saw, until long after the original patent to this applicant. The conclusion is irresistible. Such testimony on the part of the opposition, and this representative of the whole, becomes an argument, and a strong one, in favor of this applicant.

There is one evidence of conscience on the part of the opposition which deserves mention, viz., the case of McDaniels: he swears that he saw movable comb frames, as Langstroth uses them, when he was a boy. He identified the invention fully, and swears positively; but when called up to hear his deposition read, takes it all back and swears he is satisfied there were no frames, nothing but cross-sticks, in the hives he saw.

The examples above given are sufficient to indicate and stamp the character of the testimony offered by the opposition.

The testimony established beyond question the value and importance of the invention to the bee-keeping public. Even the opponents to the application are compelled to admit that it is one that is revolutionizing the system of bee-culture and rendering it popular and profitable, and unquestionably one for the discovery and introduction of which this applicant has received nothing approximating an adequate remuneration, and scarcely a bare subsistence, as the result of untiring effort to introduce it and to instruct bee-keepers in its use.

The above is believed to cover the ground required of this report as far as is practicable, without going into careful analysis of the whole testimony and this believed to be unnecessary in view of what is herein stated.

Respectfully submitted,

ADDISON M. SMITH,
Examiner in Charge.

HON. T. C. THEAKER, Com. of Patents.

[For the American Bee Journal.]

Italian Bees, Questions, &c.

Is the allowed superiority of the Italian bees a *natural* quality, or only the result of *circumstances?* People here have thought that changing the locality of bees once in a few years, was productive of good. One case I will mention. One very poor year, a man who had a dozen or more swarms, gave one to his daughter who was married. Others had let here and there a swarm, all of which were moved; and it was noticed that all those moved swarmed, while those not moved did nothing. The bees thus swarming showed no superiority in the spring over those not moved. If Italian queens are imported, or raised here and sold, the mother of the new queen has changed her location; and that, I judge to be equal to changing the swarm.

Again, is there not an advantage in mixing and crossing the *breed*, and not only the different breeds, but the *same breed*, by mixing bees from the home apiary with those from a distance. I see "friend Alley" guards against the too frequent breeding *in and in* of his Italian bees. It is said that the human family will degenerate where there is a succession of marriages between near relatives. Most bees are Italianized by *crossing* them; and is not that circumstance a reason for their superiority? And after Italian bees shall have become common in a given locality, would there not be an advantage in changing them back to black bees, by gradual process?

While some complain that their Italian bees, reared from queens purchased, were not so good as native bees, others have suggested that queen raisers had better sell fewer queens and at higher prices, and be careful to breed from *prolific queens* only. Is not that *circumstance* in the case, of great advantage; and would not black bees be as much benefited by the same means? Would there not be another great advantage in breeding not only from great breeders, but from great *workers* also? Some bees here are greatly given to swarming, and others to making large quantities of honey. If these two last qualities could be combined, I think our stocks would be much improved.

I have now asked my questions, and made some suggestions. I hope some of the *knowing ones* will answer—not objecting, however, to any one that will kindly favor us with an answer.

My main question is, is the superiority of the Italian bee a *natural* quality?

ALONZO BARNARD.

Bangor, Me., June 18.0.

[For the American Bee Journal.]

Some Thoughts on Bee-culture.

I have kept bees a good many years, and wish to give you some reflections, the results of my observations and experience. Hives, whether straw, box, or any kind of patent, should not be set nearer to each other than about four feet, nor higher from the ground than one foot. It will then be more convenient to work among them, and young queens will be less liable to mistake their homes and be lost. They should be sheltered from storms and the sun. Every hive should be raised from its bottom board once or twice a month, during the working season, that any moth-worms found there may be destroyed. The bee-moth is the great pest of the apiary, when the bee-keeper is careless and slovenly. It is particularly injurious to weak stocks, and such should be more frequently examined, and the worms destroyed.

I think bee-keeping is a paying business, if carried on right. But hardly one farmer in a hundred takes proper care of his bees. That is the reason they lose their stocks, and leads them to say bees are unprofitable. If I had a thousand stands of bees I would bid farming good-bye, for I am satisfied I could then make money and have easy work. Perhaps bee-keepers should be glad that all men do not like bees, for if they did we could not get ten cents a pound for our honey, there would be so much made. I sold eight hundred pounds last season, at twenty-five cents a pound, besides having as much as the family could use. I have three kinds of patent hives—Keith's, Beard's, and Van Zimmerman's, and like them very well. Patentees should furnish cuts of their hives, as we could then better understand the description of their inventions, and form some opinion of their value.

Bees did exceedingly well in these parts last summer. I have taken the AMERICAN BEE JOURNAL for three years past. I like it better than any paper I ever took, and so long as it is published,

I must have it. I would advise all bee-keepers, and all who intend to keep bees, to take the Journal, and read it carefully.

A. J. BRUNDIGE.

Ottawa, Ills.

[For the American Bee Journal.]

Wintering Bees.

I read every article in every number of the BEE JOURNAL, but none with more interest than those that give us facts in regard to the production of honey and the successful wintering of bees.

The ultimate object of all bee-keeping is the production of honey; and the most that any bee-keeper can do, to promote this production, is to provide suitable habitations for his bees, and to take the best possible care of them through the winter. He can do nothing to change the instinct of the bee, and nothing to alter the character of the honey season. If the season is productive of honey, he rejoices; if it is not, he has only to submit—he can do nothing to change it. But in wintering bees, the case is different. In this matter the bee-keeper has full power, provided he has the requisite knowledge. He may cause the loss, unwittingly, of every stock; or *he may save every one.*

This last statement may be thought a strong one, but I think it is true. A colony of bees, to live through the coldest winter, need simply plenty of *good* food, but not too much; sufficient warmth, pure air, and dryness. If the preceding season has been favorable, every colony worth saving will have plenty of good food. If it has been unfavorable, feed them a sufficient quantity of sugar syrup, as soon as the honey harvest has closed. Having now a supply of good food, the bees will generate their own warmth sufficiently in the coldest weather. If left on their summer stands, they will certainly get the necessary pure air; and if properly ventilated at the top and bottom of the hive, they will keep dry. I believe no colony has ever d ed in winter, unless one or more of the above four conditions were wanting. It would seem an easy thing to provide those conditions for every colony of bees, every winter, and so lose none. Yes, that is just my opinion. Must we have a bee-house or a cellar to accomplish this? Just as you please. A nice bee-house is a conven ent thing to have, but I do not consider it necessary. The best one ever made can furnish only *one* of the above requisites, namely, warmth; and thanks to Mr. Langstroth, we can get that out doors, much cheaper and with much less trouble, by removing the honey-board, placing two small sticks across the frames, and before replacing the cap, covering the whole top of the hive with old carpeting, or batter with the cotton batting comforters, described in a previous number of the Journal. Then by leaving the entrance open three or four inches, we get the requisite fresh air, ventilation, and dryness. I wintered twenty-seven colonies in this manner last winter with perfect success, losing not one, although five of them were queenless, and several others weak in bees, owing to the failure of the honey harvest last year. My queenless and weak colonies have been strengthened up with frames of brood from strong colonies, so that now all are in fine condition.

Notwithstanding my efforts to prevent swarming, by giving an abundance of room for the brooding chamber, viz., eighteen inches square by ten inches deep, and 3,600 cubic inches for surplus honey on top, yet I have had seven fine natural swarms up to June 8th—three of them as early as May 19. Who says that the Langstroth shallow hive is not favorable to early breeding?

Bees wintered on their summer stands have one great advantage in the matter of frequent evacuation; thereby avoiding a tendency to dysentery—which is merely an inability to retain the fæces. My bees were observed flying on twelve days between December 26 and March 30, when they made their *g neral* spring flight, as follows:

Dec. 26. Therm. 48° a few bees from all the hives
" 27. " 43° sparingly.
Jan. 2. " 51° rather freely.
" 17. " 54° freely.
" 26. " 55° very freely.
Feb. 7. " 45° sparingly.
" 15. " 44° "
" 16. " 46° generally.
March 16 to 20, thermometer at about 45°, flying rather freely every day.
" 30 general flight.
April 8 and 9, first pollen brought in.

March 13 to 15 all my hives were buried completely out of sight by about four feet of snow. March 15, dug a pathway in front of all the hives. Next day was warm, and the bees flew as above.

To be sure when the bees fly out in winter some are lost in the snow. At first this troubled me, but it does not now. I am satisfied, from close observation, that nearly all that are worth saving get back into the hive all right; and it no longer alarms me to see a few dozen or even a few hundred bees lying on the snow, dead. Many that we see thus, have died in the hive and were brought out by the living bees on the first fair day. In fact you can tell your strongest colonies at a glance in the spring by their having the largest number of dead bees in front of their hives. I think we read in the BEE JOURNAL of as great mortality among bees kept in winter repositories, as among those kept on their summer stands.

If those who winter bees out of doors would adopt the above plan, many colonies would be saved.

R. BICKFORD.

Seneca Falls, N. Y., June 11, 1870.

Bees should have a liberal allowance of air during all extremely hot weather, and if the stocks are strong the entrance blocks may be entirely removed. LANGSTROTH.

A truthful and circumstantial biography in all its relations of a single insect, has yet to be written.—A. S. PACKARD, Jr.

[For the American Bee Journal.]

Replies—Feeding, Hives, and Wintering.

In Vol. V., No. 12, page 262, Mr. T. Woodey asks, "when is the right time to feed, spring or fall?" Since I commenced using movable comb hives, I have always preferred and practiced equalizing stores in the fall; that is, taking well filled combs from heavy stocks, and giving them to the light ones, even if I had to feed both in the spring. Consequently I prefer spring feeding, and even summer feeding, if required; and summer feeding is oftener needed than most bee-keepers are aware of. Sugar answers every purpose for spring or summer feeding. Good coffee sugar is best; yet almost any sugar will answer for stimulating.

Which is the best hive, is, or appears to be, still a disputed question. Every patent hive man claims his to be the very best in use—far ahead of all others, &c., &c. But to tell you the honest truth as I understand it, I have never yet seen anything in the shape of a hive, that beats the Langstroth hive. Although I prefer a different form from that which Mr. Langstroth uses, still it is a Langstroth hive for all that. And as you are a beginner you must understand that the same *form* that suits one man will not suit another; or as the old Indian said we would be all after one squaw, and then you know there would be a muss in the wigwam. You will find the Langstroth cheap, simple, and efficient; and this cannot be said of all other hives. In fact, it will not require an engineer to run the machine; or, in other words, an inexperienced person can handle one.

In the cellar or a special repository properly constructed above ground, is the best place for wintering bees, because of the saving of honey, if nothing more. I can winter bees in a cellar, and not have them consume over one pound per month, either a strong or a weak swarm in the form of hive that I use; and you ought to learn to do the same. But I want the management of the swarm myself the previous season. The fact is, that if bees have the right kind of ventilation, both in the hive and in the cellar, they remain in a semi-torpid state, as it were throughout the entire winter, even as long a winter as the past one was. My bees were lighter in stores last fall than I ever had them before (that is, a dozen swarms or more.) I set them in a month earlier than common, and set them out a month later; yet I wintered every swarm.

E. GALLUP.

Orchard, Iowa.

[For the American Bee Journal.]

Who has the Best Bee-Hive?

"I have!" rings out from a thousand tongues. Well, gentlemen, I must beg to differ; and as nearly all of you have had your say, with the editor's permission, I will tell you what I think. Nearly all the hives offered for sale are too complicated, have too many "fixings," and hence are more or less troublesome to operate. With many, more or less bees are killed every time they are opened and the frames taken out. Others again are so novel in their construction that one is at a loss to determine whether they were designed for bee-hives or butter churns. Probably all may have some good points, but I am quite certain that many, as a whole, are worthless.

Now, I have a bee-hive; and doubtless most of you have heard of it. It is patented both in Canada and the United States. It is the principal hive in use in Canada, and has taken six first prizes at Canadian Provincial Fairs. I believe it to be the best hive in America. So far as my knowledge extends, there is not a hive patented in Canada or the United States, that compares with it in simplicity, and yet has so many advantages, except the Langstroth hive. And while it is just as simple as the Langstroth hive, in construction, it has some advantages which that has not, and in my opinion is an improvement on that hive. The following are some of the advantages:

It has a movable bottom board, against which there cannot be raised one valid objection. It has but one entrance for the bees; which may be enlarged to twelve inches long by half an inch deep, or contracted to half an inch square in a moment, by a metal slide—shutting out drones, or shutting in the queen at your pleasure. The frames are regulated at equal distances apart, and yet admit of a lateral or side movement as easily as in any hive. The frames are far more easily removed than from the Langstroth hive, and only have one bearing upon a sharp edge at the top, where it is easily seen when putting in the frames. It is ventilated according to scientific principles, and never gets out of order.

Now, gentlemen, have I not got the best hive? "Oh," says one, "you have hives for sale." No, not one in the United States; but I have territory for sale (see advertisement), and it must be sold. It is, however, my honest conviction that most of the frame hives brought before the public are too complex and difficult to operate with. As I have before said, I say again that where there is one better hive than the Langstroth, there are fifty inferior ones and fifty worthless ones.

J. H. THOMAS.

Brooklin, Ontario.

[For the American Bee Journal.]

The Queen Nursery.

MR. EDITOR:—One of your correspondents on page 256 of the American BEE JOURNAL, Vol. V., gets terribly sensitive over patent rights, and especially over the Queen Nursery.

He admits that "in theory the matter seems very plausible," and then asks, "how about its practical applicability?" and then proceeds to settle its practical applicability in the following logical, scientific and respectable manner: "Two years ago, as I remember, Mr. Adam Grimm, of this place, used an arrangement substantially similar, and in so far anticipated the doctor. But he soon discontinued the use of it, as not

fully answering the purpose; and as I know Mr. Grimm to be a thorough apiarian, I can scarcely think that others will be more successful with the new device."

Well, who can stand such a strong, logical, knock-down argument as the above? Friend Grimm, with a *substantially similar* invention failed, therefore Dr. Davis must fail, and all o hers who have *successfully used* it must fail in its use! But how does Mr. Wolff know that my "Patented Queen Nursery" is substantially similar to the arrangement used by Mr. Grimm, since he never saw mine? Can he testify to facts in this case before he knows them? If we admit such testimony it might be productive of much mischief.

But, again, a little variation in arrangement of similar instruments or machines may entirely change their utility in certain directions. This shows that Mr. Wolff drew his conclusions prematurely, before the premise was laid that would overthrow the practical utility of my invention.

Mr. Wolff proceeds—"Moreover according to the description given, though we may secure an increased number of colonies, we shall not obtain supernumerary queens for market, unless we rear them specially, and this with more or less damage to the colony, by depriving it of its fertile queen."

Where did the *description* given say that we could *not* obtain supernumerary queens for market, unless we rear them specially? This is another conclusion reached before the premise is given, by me, at least. It is unfair to infer that I had given such a description, when I had not, and assume it as true before the world, and that, too, in public print, where it can never be fully recalled, if ever desired or required. If by my invention I can raise queens to *increase colonies*, will it not hold good to raise *supernumerary queens for market*, without throwing in that word "especially," to deceive the reader's mind about the value of the Queen Nursery?

Where, too, in the *description given*, did Mr. Wolff find that I said, or represented that the fertile queen, in order to raise supernumerary queens, must be removed from the colony to its damage? Here is another position *inferred* and assumed as true, when there is nothing of the kind said by me in that description. Would not true statements and facts be better weapons to destroy my patent with? In the next place, Mr. Wolff proceeds to represent that Mr. Grimm "subsequently employed a process practically much more serviceable" than the Queen Nursery, or the substantially similar arrangement of Mr. Grimm, I suppose, of course. But upon this point I shall neither affirm or deny until I *know* the truth. Then comes the famed counsel of Mr. Wolff, what he would *do* instead of employing Dr. Davis' plan.

Well, I give *him* the privilege of "following the counsel of his own will," and let his colonies accept his proffered queen cells as they generally do, or destroy them as they *sometimes will*.

But now comes the *horror* of *horrors*, that "patenting everything about bee-hives, and particularly the process for raising queens. Oh, the fears of "litigation" and "perplexing discouragement to bee-keepers," when shall it end?

Now, Mr. Editor, I can see no good reason why Mr. Wolff should so particularly pitch into me and my invention, unless it is found in the fact that friend Gallup told him through the May number* of the American Bee Journal that I had sent him a Queen Nursery *gratis*, to try. Wonder if friend Wolff would try one, if I should send him one *gratis!*

I see no other good reason for Mr. Wolff's appearing at this particular juncture, unless, it is from his particular horror of patents. It compels him, as soon as the circular announcing their existence reaches him, while they are yet a good ways off, to pitch into them; and that, too, before he has seen them, or knows anything about their value, or the *truth* he finds set forth in the circular about the Queen Nursery.

JEWELL DAVIS.

Charleston, Ill.

Profitable Bee-keeping.

Some time since we gave an account of our visit to an apiary near Springfield, Ill. Since then, the proprietors have informed us that the product of surplus honey from one hundred and twenty hives, has been about three tons and a half. This has been sold mostly in Chicago, St. Louis, and Springfield. One shipment was made to New York, but the returns were very unfavorable. At the prices obtained for our own honey, averaging about twenty-two cents per pound, we should think that the above was a pretty profitable investment.

There are several extensive apiaries in our own county. Mr. Salisbury, of Tolono, has over two hundred swarms. Dr. Chaffee, of the same place, has a large number. Mr. Porter, at St. Joe, Mr. M. L. Dunlap, at Champaign, and Mr. Cherry, at Mahomet, all have quite a large number of hives: and we believe they find it so profitable, that they are not yet ready to abandon the business. There are a dozen or more persons of our acquaintance who have from ten to fifty swarms, who intend to increase the number the coming season.

By artificial swarming none are lost; and by using the honey-extracting machine, a much larger quantity of honey can be stored in a given time. The honey is thrown out of the comb by centrifugal force, and the empty comb is then returned to the hive.

Some wise "beeman" has estimated that it requires a consumption of fourteen pounds of honey to make one pound of comb. If this be true, it is easily seen that a large saving will be made by using the honey-emptier.

Much has been said of late years about the value of Italian bees, while there are some who claim that they can and *do* gather more honey than the black bees. Our experience does not confirm this. The principal value of their introduction, in our opinion, consists in diffusing new blood by crossing. Bees, like everything else, deteriorate by in an in breeding.—*Champaign County (Ills.) Gazette*, March 9, 1870.

* It is only justice to Mr. Wolff to state that his communication was in our hands before the May number of the Journal was published, though received too late for insertion in that number.—ED.

THE AMERICAN BEE JOURNAL.

Washington, July, 1870.

☞ In compliance with the request of many new subscribers, we insert this month cuts illustrative of Mr. Alley's modification of the Langstroth hive, with a description of its construction and arrangement, prepared at our instance by Mr. Alley.

The "BIENENSTOCK" is a German monthly devoted to bee-culture, published at Allentown, Pa., by Joseph Kilian, at $1.50 a year. Though it has reached us irregularly and late, and the third number failed entirely, the paper appears now to have got fairly under way, and well merits a liberal patronage from German bee-keepers—of whom there is a large number in the United States.

The "POULTRY BULLETIN," is a new monthly issued in New York, by the Executive Committee of the New York State Poultry Society, at $1 a year. It is in competent hands, and must be interesting and valuable to all who keep poultry, whether for pleasure or profit.

Death of James T. Langstroth.

We are pained to hear, as this number of the Journal goes to press, of the death of JAMES T. LANGSTROTH, the only son of the Rev. L. L. Langstroth, of Oxford, Ohio, which occurred at Greenfield, (Mass.,) on the 14th instant. We had learned that he was very ill, and it was not probable he would recover or long survive, but were not prepared to hear so soon of his death. We regret that he was cut off thus early in his career of usefulness, and sincerely condole with his bereaved parents on their irreparable loss.

Though we have selected and translated for this number of the Journal, two articles on the modes of securing large crops of honey, it is with no desire or expectation than American bee-keepers should adopt either in detail in their practice, or follow them empirically. Our purpose is rather to illustrate by example some of the chief principles involved, that these being once clearly apprehended may serve to guide beginners intelligently in their operations, leaving them free to make such modifications or deviations as shall, on reflection, seem to them expedient or likely to prove advantageous.

We intended last month to say that we shall be pleased to receive further communications from Southern correspondents. We need more information concerning bee-culture in the "sunny South," where it should be making more progress than it appears to be doing. It is hard to understand why it is thus laggard in a section of country where bee pasturage is so abundant, so diversified, and so prolonged. May it not be because most of the more intelligent class of the community there have not hitherto given the subject deserved attention—have not in fact, made it a study? It may be that, for the South, some peculiar mode of management is needed—a special adaptation of what has been gained from experience and observation. If so, frequent and full discussion of the methods and processes prevalent there in practice, would probably elicit suggestions leading to a beneficial change.

From a recent careful enumeration it appears that in the City of Nuremberg and the eighty-four villages in the immediate neighborhood of that city *three thousand and five* hives of bees are kept. Of these eleven hundred and eighty are movable comb hives, and the remainder ordinary box or straw hives.

Bees in Bavaria.

According to the official returns for the year 1863 (the latest published), the number of colonies of bees in the kingdom of Bavaria, was as follows:—

Upper Bavaria	52,665
Lower Bavaria	31,435
Bavarian Palatinate...	21,074
Upper Palatinate.....	22,861
Upper Franconia.....	16,100
Middle Franconia.....	25,763
Lower Franconia.....	28,367
Suabia and Neuburg	34,874
Total	233,139

☞ HEARTH & HOME for this week (dated June 25th), contains the first of a series of sketches entitled *Jethro Throop's Night Thoughts*, by JOHN THOMAS, who is no other than PETROLEUM V. NASBY The great humorist will take an honest country boy to the city, conduct him through the usual experience, and restore him to his home a sadder and wiser boy, satisfied that the peaceful, honest, and temperate life of the farmer is the best and safest life that can be lived. This is a lesson greatly needed at this time, and NASBY is the man to teach it.

CORRESPONDENCE OF THE BEE JOURNAL.

NATCHEZ, MISS., May 21.—I believe it is acknowledged by apiarians that next to movable frames, ranks the invention of the honey extractor. Sometime since, I ordered one from Mr. J. L. Peabody, Virden, Ill., which reached me on the 19th of April and was at once put in use. I am highly pleased with it, it came fully up to my expectations, and would recommend it as being superior to any I have yet seen constructed on any other plan.—Last year I had in use one made after the first designs published, and used it successfully, but have now cast it aside. I would suggest, however, that the wire cloth used

should be of a mesh not more than six to the inch which I find to work far more satisfactorily than finer cloth, especially in extracting thick honey.

The swarming season with me is now ended. With few exceptions, all my swarms have issued naturally. I never have any first swarms to leave without settling, and, that without noise of any kind, giving ample time to secure them. My apiary now numbers eighty hives—six not having swarmed yet. My purest Italian stock threw out a very large swarm on the 27th of March; and on the 30th of April this new stock threw out a swarm, after first filling several boxes with beautiful surplus honey—the old queen leading both swarms. This is another recommendation for the Italians. Of the remainder of the hives in the apiary, the first swarms commenced issuing on the 6th of April, and were hybrids—the blacks coming out some days later.

Our spring has been backward. Honey gathering was good three weeks ago, but on account of a very dry spell, with cool nights, the bees are accumulating nothing now. For a week past the drones in most of the hives have been driven out. June has always been a good honey gathering month here. I have observed that about the middle of July the queens cease laying almost entirely, and every available cell is filled with honey throughout the hive. After that period no more surplus honey is accumulated, though an abundance is to be had to supply their wants until winter comes on.—JOHN R. BLEDSOE.

KNIGHTSTOWN, IND., May 31.—We have had a very dry spring so far. In fact we had only about two inches of rain fall in the last two months; and the flowers do not secrete honey as if the weather had been warm and moist. But in the last few days the nights have been cool, and there seems to be a difference in the working of our bees. So far the weather has been rather unfavorable to bee-keeping, this spring. There appears to be a fine crop of white clover bloom, but the bees have not stored any honey from it yet. I hope for the better.—J. C DEEM.

KINGSVILLE, MO., June 4.—Bees came out strong here this spring and bid fair to do well, but the weather has been so very dry for some time past until a few days back, that they have not yet commenced swarming. Bee-men in this section seem to be taking more interest in their bees than usual, though few have yet obtained the Italian bee yet, and the common drum or box-hive is still almost universally used. During the past two seasons, however, a few have been using the movable comb-hives, and are delighted with them.—This spring the country is flooded with all manner of patent hives. Nearly all, if not all, have their moth traps connected with them, warranted to *out-wit* the miller in his efforts to get into the hive. I regard the traps as humbugs, and most of the hives. —D. B. REAVIS.

WEST CHESTER, CONN., June 6.—In the BEE JOURNAL the machine for emptying honey from comb, has many commendations, and about as many names—namely, honey-emptying machine, honey extractor, honey slinger, melextractor, smelatore, &c., &c. Now, why not call it Hruschka (pronounced Rooshka). Many have had their names attached to their inventions. Daguerre has his name immortalized, in the daguerreotype, and bee-keepers will doubt whether his invention is more of a boon to humanity than that of Major Von Hrushka. I wish we might hear no more of honey slingers, melextractors, &c., but instead thereof let us have Rooshka, an honor justly due to the illustrious inventor of a most valuable machine.—W. H. KIRK.

NEW BEDFORD, MASS., June 8.—I received the last number of your interesting and valuable paper to-day, and hasten to send the subscription for Vol. VI. My friends say that I have "bee on the brain;" but if being exceedingly interested in the wonderful and invaluable instincts of the bee is bee on the brain, I confess to the disease. If, however, they would take the Journal, and read it as carefully as I do, they also would suffer the same malady. I think *now* that they begin to show incipient symptoms, for several have applied for swarms; and the next stage will be the application for the Journal.

Bees have swarmed earlier and better so far, this season, than for quite a number of years, in this locality.—E. P. ABBE.

SPRINGFIELD, ILLS., June 10.—We appreciate the Journal here, and like it for its independence and freeness from axe-grinding; and sincerely hope the subscription list will soon warrant the issue of a semi-monthly or weekly.

Spring opened early and dry here. Bees come out of winter quarters in good condition. Blossoms lasted only a short time, owing to the drouth. Bees are strong in numbers, but backward about swarming.—G. AYRES.

DANVERS, MASS., June 13.—The season has again arrived when those who keep bees expect to get some profit from them, either in swarms or honey, and perhaps some account of our success or failure might not be uninteresting to your readers.

Our first swarm of bees was found on a heap of brush on the first day of July, 1857. No schoolboy was prouder with his first jacknife, than we when we carried home our first swarm. The next year our hive swarmed once, and from so small a beginning, we have continued bee-keeping, with various results. We have purchased six Italian queens, and have at this time nine Langstroth hives. Last fall we had eighteen colonies. Five of them being out of doors, we concluded to winter them in a building, it being a large out-house clap-boarded and pretty warm. Those wintered in this outhouse came out all well, and of those wintered in bee-houses, we lost two, making our stock in the spring sixteen hives. We have had, to this time, seven swarms. Two came out yesterday at about the same time, and went together.

Our stocks are all in good condition, and the bees are working in the surplus honey boxes, except those just swarmed. We had one swarm issue on the 20th of May, but the queen being heavy, fell to the ground, and the swarm returned. Having found the queen, we drove a swarm out, and by exchanging the old stock with another strong colony, brought them into good condition again.

There is every prospect at this time of a good honey harvest here in Massachusetts, for which we most devoutly hope, as we have not had a really good honey season for five years. And now, Mr. Editor, the time has arrived to renew our subscription for the BEE JOURNAL, for I do not see how we can do without it. You need not be afraid that I will mistake your BEE JOURNAL for any other, for there is no other good one that I know of. I enclose two dollars for the sixth volume, and wish you all success in your undertaking.—E. E. PORTER.

FOXBORO', MASS, June 13.—Enclosed please find two dollars, in advance payment for the AMERICAN BEE JOURNAL for the ensuing year. I have at various times during the past year thought of writing a series of articles for your Journal, but business has so driven me that I have been unable to do anything in that line.

The last season, as every bee-keeper knows, was a very poor one; but I was successful enough to carry all my stock, by seeing in September, that they were well supplied and fed. This spring has opened finely. The blossoms never seemed to yield so bravely, and

now the white clover is setting in very thickly; and if nothing "turns up," the honey season of 1870 will be the best of the *decade*.

In my experiments in testing the virgin drone theory I have gone three generations, and find no change. I have to-day a queen of Dzierzon stock mated with a black drone, whose drones are the only one which I have allowed within miles of my experimenting stock. These drones have fertilized successively three generations of queens from the same stock, and the last generation shows as fully striped and handsome colored bees as you ever saw, although I do not think they are very smart, owing to being bred "*in and in.*" But the above *facts I know;* and they prove to me that the drone egg is in no way affected by copulation.—J. E. POND, JR.

VERVILLE, TENN., June 13.—I am largely engaged in bee-culture, and have nearly all the reliable books on the subject, but prefer the Journal to them all.—J. M. BELL.

KLEINBURG, CANADA, June 13.—The wintering of bees last season, in this locality, so far as I can learn was truly a calamity, in consequence of the scarcity of stores through the wet and cold weather we had here last year. When I discovered that mine were short of stores, I prepared syrup of clean coffee sugar, as I got no honey, and fed them. But unfortunately I waited too long in the fall, as I still hoped the bees might collect supplies enough to carry them through the winter. No sooner had they taken up what was provided by the hand of their keeper, than cold weather ensued and prevented them from sealing it up. I am of opinion that I had better not given them any syrup, as that would have saved trouble and useless expense; but one who admires such an insect as the industrious honey bee, will do all in his power to preserve them, if it be possible. If I had anticipated any bad result from feeding them so late that they could not seal it up, I am sure it would have been done earlier. It is true I have been in possession of the theoretical knowledge that bees should be fed, if necessary, early enough to enable them to seal up what is given, while warm weather continues; but unfortunately none of the authors on bee matters that I have read, made it a point of such great importance as it appears to be. They merely say that it ought to be done, but do not state the disastrous consequences of feeding so late that the sealing cannot take place; and thus I did not expect that the result would be so bad, as in many things no ill accrues from slight deviations or neglect. I may now say, however, that if the feeding is not done so early that the bees can seal up what is given, the best way is to let it alone; for, as far as my experience goes, it is certain death to do it up as in my case.

Will it do to feed bees for winter with clean brown sugar syrup? I never saw or heard the contrary urged, except on doubtful authority. And how should syrup be prepared to prevent crystalization? This is another important point. I never was able to produce such an article even with glycerine, prepared according to a correspondent of the Journal in the number for April. But as I have not tried the syrup inside the hive, I cannot say positively that the glycerine is no prevention of crystalization. I made some and kept it in a bowl standing for three weeks, and it began to crystalize. Now would such an article be fit to feed bees on for winter? I should be glad to hear something on that point, as I am deeply interested, and so, I am sure, are many more of the numerous readers of the Journal.—C. WURSTER.

PORT CLINTON, OHIO, June 16.—Bees are doing well here—swarming and storing honey in boxes.—P. S. VAN RENSSELAER.

MINNESOTA CITY, MINN., June 16.—Bees are doing very well here at present. Some Italian stocks have swarmed five times. Bees are at work in surplus boxes now. If everything runs smooth, or we do not have any drought to cut off the pasture, we shall get a good yield of honey. I shall keep a record of all the honey stored this season. I wish all the bee-keepers would do the same, and report this fall. So hurrah for the OLD AMERICAN BEE JOURNAL and its readers.—W. ROWLEY.

SALEM, N. C. June 18.—The spring opened with as fine prospects for bees, as I ever saw; and continued so until the 20th of May. Since that time we have had an abundance of rain, which has retarded swarming very much. I have had about forty-five swarms this season, and have some fifty old stocks that have not swarmed yet.—J. W. HUNTER.

[For the American Bee Journal.]

The Honey Extractor.

I see that friend Argo sort of hints that he wants Gallup to say something about the honey slinger. I have one of the Peabody machines. After seeing the description of the various kinds that is my choice. And, come to see the critter and work it, I really cannot wish for a better. Understand that there is no machinery about it; actually nothing to get out of repair, and it works like a charm. It will last any man his lifetime, providing he dies in any decent season; or if he should take a notion to live another generation, I thing the machine would still be there and ready to do service. And now, *for how I have been using the animal.* The season has been unusually good thus far; and when I have taken out two frames of brood from one of my hives and supplied their places with two empty combs, the bees would fill them with honey and in many cases two or three times, before I could bring the queen up to the scratch to fill them with eggs; and I could sling the honey out in a jiffey. In other cases, where a natural swarm has issued, before the young queen has commenced depositing eggs, every available cell would be occupied with honey; and the way I made the honey fly was a caution to old brimstone times. Here in the two cases above stated, we can see a practical use for the machine, at least I can; and can see in other cases that an Extractor is actually indispensable. The wonder is, how we ever got along without it.

I find that honey of the present season's gathering can be extracted until the comb is left almost perfectly dry. But honey that has remained in the hive from last season's gathering, cannot be taken out so clean, yet the most of it can be taken out. I have tried a couple of combs of last season's gathering, just to see how it would work. On the day I tried it the weather was quite cool—rather too cool for opening hives and working the extractor. Still I wished to try it under the most unfavorable as well as the most favorable circumstances.

Hurrah for the OLD AMERICAN BEE JOURNAL—THE OLD STAND BY; the Honey Slinger; and the season of 1870! If the season holds out as it has commenced, I am all hunk-a-dori!

ELISHA GALLUP.

Orchard, Mitchell Co., Iowa.

The Asters and the Golden Rods.

If an American field, or wild hedgerow, could be suddenly dropped in the month of August or September in the heart of France or England, the good people over the sea would be very much surprised at the great number of the Michaelmas daisies and the golden rods blooming there. Both these plants are especially American. As we all know, they grow everywhere in great abundance in our own country. But some of us may not be aware of the very great variety of the different species. There are said to be, in North America, as many as one hundred and thirty species of asters. Among these are several which are showy flowers. We never see them without wishing they could be carefully cutlivated; something new might in this way be developed for our gardens. The raspleavid aster, and the showy aster, with their purple heads, are already fine flowers; so is the silky aster, bright violet in color, and the spreading aster, growing in copses, and the delicate silvery aster, and the azure aster; all these would probably be improved by cultivation.

As for the American golden rods, we are told that they number ninety species, though few of us have seen them all. Owing to their brilliant yellow coloring, and the rich masses in which some of the flowers bloom, they are generally more ornamental and more conspicuous than the common asters. They add very much to the beauty of the country in Agust and September, and, being hardy plants, are among the latest flowers found in bloom; even in November we see them in sheltered thickets, where roving bees generally find them out. One would suppose that skilful culture might very much enlarge the flowering heads of this plant, and its single blossoms also, in which case it would really surpass most other flowers of the same color found in our garden to-day.—*Appleton's Almanac.*

[From the American Naturalist.]

HONEY BEE KILLED BY SILKWEED POLLEN.—Enclosed I hand you a honey bee for examination. I found it lying on the ground, far from any apiary, nearly dead, and ceasing to move soon after I picked it up. I found its legs bound together by a great number of those minute disks with their articulate stems, that can be seen by the naked eye. I presume its death was caused by starvation alone, its entanglement causing all its efforts to be directed to freeing itself, but without avail. I presume I pulled off one-half of the disks that were upon it at first, before I thought of saving it for microscopic examination. Mr. Langstroth speaks of bees becoming entangled in silkweed blossoms. This may be a case.—ROBERT BICKPOND, *Seneca Falls, N. Y.*

[These bodies are, as you surmise, the pockets of the pollen of the silkweed, Asclepias, which adheres by a glutinous substance to wasps and bees frequenting the flowers. They are figured and fully described in the NATURALIST, Vol. I, p. 1 5, and the Guide to the Study of Insects, p. 165. We have never before heard of an insect actually losing its life from this cause, and the case is a very interesting one. EDS.]

[From the Country Gentleman]

The Ancient Art of Hiving.

About July 20th, while riding in the country, I had the following little bit of amusement: A large swarm of bees were in the air. A man, woman, and boy had bell, tin-pan and tin-pail. They had driven them by "drumming," through an orchard, away from every tree, except a stunted thorn-apple. In getting over the orchard fence, the man fell and seemed badly hurt, and for a few moments the tin-pan and bell were still; when, just as the bees would have done close to the honse, had they been without the annoyance of the discordant din, they lit on the nearest tree—the thorn-apple. Next, the man brought an old cracked hive, and, with sweat on every pore, he salted it and rubbed it with molasses, and hived them. On my return, two hours after, the swarm had left for the woods. Was not that man to be condoled with? Did he not drum, salt and daub his hive? Was not the old hive dirty enough? And with such excelent care the bees ought to have staid! Had we been bees and been treated so, would we not have gone to the woods? "Bray in a mortar" old ignorant rules, and yet bee folly will still live.

S. J. PARKER, M. D.

Ithaca, N. Y., August 14, 1869.

HONEY BEE KILLED BY POLLEN.—In an article in the NATURALIST for February on "Honey Bees Killed by Silkweed Pollen," you say "we have never before heard of an insect actually losing its life from this cause." In 1860 my attention was called to the same fact; many hives had their stocks seriously reduced from this cause. On a single specimen I counted over one hundred pollen masses attached to the claws and legs. When the claws are thus fettered, the bee cannot climb upon the combs nor collect honey, and is soon expelled from the hive and must die. The unfettered bees tumble them out with little ceremony. As the common silkweed (milkweed we call it here) needs insect aid to free its pollen masses, and thus secure the fertilization of the stigma, there are peculiarities in the structure of the flower to secure this result; and for this purpose the polen masses are attached to a *cleft* gland. When the insect visits the flower to secure the honey, of which there is an abundance, it must step on the gland to reach the nectary, and a hair or claw entering the cleft becomes fast. To free itself, the insect must pull out the gland with the polen attached, or remain and die; and the latter is really the fate of many small flies and moths.—J. KIRKPATRICK, *Cleveland, Ohio.*

In some occasional cases, where the nectarium of the flower is not perceptible, if the spur of such a flower, which usually becomes the depository of the nectar that has oozed from the capsules secreting it, be too narrow for the entrance of the bee, and even beyond the reach of its long tongue, it contrives to attain its object by biting a hole on the outside, through which it taps the store.